AUDIO VISUAL COMMUNICATION REVIEW

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HOPE AND FULFILLMENT IN ETV RESEARCH

• CHARLES F. HOBAN

At a time of unbounded enthusiasm for educational television, this careful appraisal of ETV research and its findings is welcome. *Charles F. Hoban is a member of the staff of the Institute for Cooperative Research and the Moore School of Electrical Engineering, University of Pennsylvania.*

THIS ARTICLE had its origin in a memorandum privately circulated after I attended a series of conferences over the past 18 months related to television in education. The original memorandum is reproduced below with only minor introductory changes. It deals with some of the confusions in major objectives of educational television, and hence of ETV research; the theoretical significance of findings technically not significant; the function of research in the decision process; and related topics woven into the discussion. In this article, I touch lightly on these topics, but there is a needle here and there, where it may do some good.

In the original memorandum I made it clear that what I say has been said by others, before, and better. This is a handy safety device to use when dealing with controversial subjects. It beats the critic to the punch, and justifies by association the biases to which the author remains staunchly faithful.

This article is intentionally provocative. My motives in preparing it are lofty, but not innocent. I believe that a serious threat to ETV research exists, or could easily develop, because the facts established to date by ETV research do not indicate that ETV has produced a major educational breakthrough as the simple consequence of application of a new technology of communication in education.

I respect research because I respect facts. Research is a fact-finding process. I know from personal experience and the recorded experience of others how easily research provokes executive penalties when it finds and publishes unwelcome facts. I also know

that research is not a sacred cow. It is a costly process, a great time consumer, and a high risk enterprise. Nevertheless, research is a necessary enterprise, and it should never be threatened for not doing what it cannot and should not do, even though it is less than perfect in its legitimate bailiwick.

THE "MORE FOR LESS" CONFUSION

Somewhere along the line of the development program in ETV I have gotten the impression that confusion has been introduced into ETV research by considering together two problems that, at this time, are best investigated independently.

On the one hand, there is the expectation that research will deliver sure-fire demonstration that the quality of instruction is increased by the interposition of a TV communication system.

This expectation is quite unreasonable. However, if we permit ourselves to be hypnotized by the assertion that TV is the most powerful means of communication man has yet devised, we can easily get into the position of expecting the otherwise unreasonable.

This power claim is not lightly dismissed. It is widely held—in one form or another for all mass media. In the June 30, 1958, issue of *Advertising Age*, for instance, CBS tells us in a two-page advertisement that, "Because television is the greatest means of mass communication the world has ever known, P and G [Proctor and Gamble] spends more of its advertising dollars on television than on any other medium."

On successive pages of the same issue, we are also told: "Your advertising *can* have more FLEXIBILITY—you can get it with THE WALL STREET JOURNAL"; "Highest quality coverage at lowest cost? *Yes*—in *U. S. News and World Report*"; and "8 out of 10 people remember *OUTDOOR* Advertising!" Each medium has its own claim on the power to influence.

I doubt that I am incredibly naive in believing that the quality of instruction over TV is not so much a function of TV as of the teaching performance transmitted by the TV communication system and what is done by students with this teaching. Other people seem to share this belief.

Let us suppose, however, that there is a current assumption that an increase in the quality of instruction is a function of an increase in the power of the *mechanism* of communication. This could imply that the TV communication system transforms an input so that the output is superior in quality to the input. Said

another way, TV transforms the teaching performance staged before the TV camera and microphone so that the quality of this performance is superior when represented on a TV receiving set than it is without TV.

I am not clear as to how this is done. I believe that if it is done, the scale of transformation is likely to be quite small. Yet, I have an uncomfortable feeling that the *concept of quality transformation* has slipped into expectation on ETV. If so, it should be brought to light and searchingly examined.

On the other hand, there is the expectation that ETV research will also and at the same time deliver sure-fire demonstration of savings in the unit-cost of instruction. This expectation is quite inviting, particularly to the educational administrator. It follows nicely from the distributive function of TV. One information source, e.g., one teacher, can "talk" over TV to a large number of receivers, e.g., students. If the number of sources in the system is reduced, and the number of receivers is increased, *ipso facto,* a reduction in unit-cost of instruction may be expected.

But there is a joker in the deck of ETV cost accounting. Unit-cost of instruction is reducible by a TV communication system, provided the combined capital and operating costs of the distribution system do not increase so as to wash out the source-receiver savings. Then, too, there is the item of institutional overhead, which is a constant in the equation of educational cost.

From a research point of view, reduction in unit-cost of instruction and increase in quality of instruction are best approached as independent outcomes. Both are important, but not necessarily related. It is unreasonable to expect that both can be obtained simultaneously overnight, teachers and teaching being what they are, and TV being what it is. Neither are savings in unit-cost of instruction or increase in quality of instruction likely to be *simple functions* of a *mechanism* of communication.

So long as these two problems are compounded, or otherwise muddled, the expected results of ETV research are likely to exceed the results that research can deliver at this stage of the art of ETV. Then ETV research, rather than ETV, stands suspect.

THE SIGNIFICANCE OF "NO SIGNIFICANT DIFFERENCE"

First, let us understand that the term "no significant difference" has a statistical meaning and that it is related to an arbi-

trarily established criterion. Whether the criterion of significance of a difference is one chance in a thousand, one in a hundred, one in twenty, or one in ten is purely arbitrary. Custom among statisticians fixes the comfort limit no greater than one chance in twenty, but this custom does not alter the fact that the customary criterion is arbitrarily established.

Second, let us understand that experimental research in education generally involves comparison, either of one result with another or of a result with some set of criteria or predictions.

With the introduction of a "new" methodology or technology in education, we seem always to be faced with a demand for research on comparative effectiveness of the "new" with the "old." By application of the law of inertia to educational methodology, the "old" needs no justification; the "new" does. It is thus understandably frustrating when proponents of the "new," who have promised so much to so many, are confronted with a maddening regularity of research results which indicate "no significant difference" between results from the "new" and the "old." This is happening with ETV research.

Actually, this finding is interesting at worst and challenging at best. There are few compelling reasons for believing that the interposition of a TV communication system in instruction will result in a significant difference in results in the "right" direction. On the contrary, there are good reasons for believing that there should be a significant difference in the "wrong" direction.

To postulate a gain in instructional effectiveness from TV is unreasonable; to postulate a loss is reasonable. It is, *if* the only independent variable is the TV communication system. When we introduce another independent variable, such as a change in the nature of the instructional input of the TV communication system, we are no longer dealing simply with a TV communication system but with an important component of any educational system. An educational system is exactly what we should be dealing with, were we not so logically rigid in our ETV research requirements. What Christopher Rand said about reporting is apropos: "Reporting indeed may not get better unless everything else does. . . ." Neither may ETV.

Why is the prediction of loss in instructional effectiveness with TV said to be reasonable? This prediction is based on the value placed on teacher-student access and interaction within the cultural image of American education. Reduction in access or

interaction between student and teacher, inherent in the one-way communication characteristic of TV and other media of mass communication, would be expected to result in loss in instructional effectiveness since it violates the cultural image of the process.

The fact that no such loss has been regularly observed, even in a limited range of student reactions, is a significant research finding. The contradiction of this reasonable prediction by an obtained result could raise a fundamental question as to the inviolability of an important aspect of the cultural image. Furthermore, it may suggest that, with some creative and talented teaching, we might dispense with spoon-feeding of students more quickly and more easily than otherwise supposed, with or without ETV.

One more word about comparative effectiveness studies before discussion of this topic is terminated. Those familiar with the history of research on radio and motion pictures in education know how much effort has been spent on comparative effectiveness studies. In historical perspective, much of this effort appears to have been wasted. The basic question is not whether x is equal to, less, or greater than y. Rather, the question is for what are x and y best suited respectively, and how can they be combined to produce optimum results. With St. Augustine, "I realize that while certain higher things are better than lower things, yet all things together are better than the higher alone." It looks as if we have been asking the wrong questions.

Even such a simplified restatement of the problem in terms of optimum combinations of x and y generates research tasks of considerable complexity and importance.

RESEARCH AND REDUCTION OF UNCERTAINTY

ETV research ultimately enters into problems of educational decision. Consequently, it is useful to look at ETV research in terms of the decision process.

Decision may be defined in many ways. In any definition at least three necessary elements are involved: an act chosen from a set of alternative acts (in research, the independent variable), the result of this act (the dependent variable), and the value of the result.

The TV program is the chosen act, the observed response is the result, and the value of the result is its perceived acceptability and usefulness on some implicit or explicit scale.

Among these three components of decision, experimental research findings deal only with results. A result is expressed as a quantity to which a probability of occurrence is established. Since the result is observed as a sequence of the act, an association between the act and the result is inferred. The findings of experimental research reduce the uncertainty of a result associated with a given act. Research does not establish the value of the result. And it makes a tactical error whenever it discusses comparative magnitudes in terms of "worse than," "as good as," or "better than." It can only indicate "less than," "equal to," or "greater than."

Decision-makers are properly occupied with values. If the nature of research is not well understood, decision-makers frequently expect that research will establish values as well as magnitudes and probabilities of results. When research fails to do this, it is vulnerable to criticism for not doing what it cannot and should not properly do. If research results are consistent with values held by decision-makers, they tend to be accepted and used to support and reinforce decisions and action patterns based on this value system. If not, the results tend to be rejected as inadequate, incompetent, or irrelevant. Research and the researcher are then threatened.

Furthermore, if research findings and their implications contradict highly valued personal experiences of decision-makers, the findings and implications also tend to be ineffective in modifying behavior patterns of the decision-makers or decision-influencers. This is what seems to be happening, or on the verge of happening, in the case of ETV research. Many of the articulate proponents of ETV have sought to raise our hopes for educational solutions on condition that we install and operate TV in education. In so doing, they have, in effect, reduced the complex process of education to an existing technology of electronic representation of picture and sound.

That these hopes are not justified by either experience or research with radio and motion pictures in education is apparently beside the point. TV is *new*; therefore, it is assumed to have no historical precedent or continuity. Yet with monotonous regularity, research results with TV in education have also failed to live up to optimistic expectations; i.e., they have failed to support optimistic estimates of the role, power, and social good assumed to be inherent in the application of a specific technology of communica-

tion to education. It occurs to me that ETV has been expected to break records in the sprint before it has learned to walk.

POSTSCRIPT

Underlying this discussion is a concern that four events may occur.

1. ETV may be sold down the river by overselling a technology.
2. ETV research may be sold down the river for its contradiction of overoptimistic expectations.
3. Sponsorship of research and development of ETV may be choked by the unmanageable size and urgency of its activities.
4. Imperative educational changes and developments may be obscured or diverted by the enticing hope of a single technological solution.

I do not think any of these dire prospects will occur in its entirety, but I do think that some elements of all four may easily occur unless we become aware of the dangers, and correct as necessary for them.

TEACHING BY TELEVISION IN THE ARMY—AN OVERVIEW

● JOSEPH H. KANNER

This paper presents a review of the Army's extensive program of research and teaching by television. *Joseph H. Kanner is Chief, Audio-Visual Applications Office, Army Pictorial Service Division, Department of the Army.*

SINCE 1950, the U. S. Army has been developing the use of television to meet military training and informational requirements. At that time, television as an entertainment medium had become established and its potential use for teaching was realized by many. However, this potential had to be translated into techniques and "know-how" which would permit the effective use of television for military needs. To obtain this information, the U. S. Army Signal Corps established a long-range study program with the objective of developing television as an effective military training and communications medium.

This program, which is still going on, represents one of the most extensive military or civilian efforts to develop television. One of its aspects is the development of suitable equipment, and the results of this program have been reflected in new television equipment. The major aspect of the program has produced information which has made the U. S. Army the leading user of television for teaching purposes.

The results of these studies have: (a) indicated that television is as effective as conventional instruction for teaching a variety of subject matter; (In the five years succeeding this study, about 30 other military and civilian studies have confirmed this finding.) (b) demonstrated that motor skills such as machine gun disassembly, radio alignment, and teletype repair can be taught by television; (This extended the use of television beyond that of transmitting lectures and demonstrations.) (c) proven that television can be used for teaching for as long as eight hours a day

for five days; (This "intensive" use of television extends its usefulness in everyday training and in emergency periods when television may be the only available communications medium.) (d) demonstrated that television recordings (kinescopes) can effectively replace or supplement classroom instruction and are also effective for review or refresher training and demonstrated that kinescopes can be used exclusively for teaching for six hours a day over a three-day period; (This was the first such "intensive" application of films for teaching and points to many potential economies in military training.) (e) developed techniques for training new television instructors in a fraction of the time required for classroom instructors; (f) demonstrated many economies in training aid requirements when teaching by television; (g) demonstrated that television is an effective vehicle for achieving reductions in training time requirements.

These findings are being applied by Army military television facilities. The everyday use of these facilities has developed other applications for television. These include mass training, where one outstanding instructor can teach a large group or number of classes simultaneously; the elimination or reduction of walking or marching time to field demonstrations; and the solving of many training problems involving shortages of training aids or complex equipment with many inaccessible parts.

ARMY INSTALLATIONS ACTIVELY EMPLOYING TELEVISION

At the present time there are 10 Army installations actively employing television for training, with others either in the stage of procuring equipment or determining their requirements. A look at some of the major users of television training in the Army will demonstrate the flexibility of television in meeting many different Army training requirements.

The Signal Schools, Fort Gordon and Fort Monmouth

In 1950 and 1951, television equipment for training purposes was installed at the Signal Schools in Fort Monmouth, New Jersey, and Fort Gordon, Georgia. These were the first television installations in the U. S. Army and their mission was to develop television to meet military training requirements. Numerous studies have been conducted at these two Signal installations, the results of which

Figure I *U. S. Army Photograph*

Closed-circuit, image orthicon television training studio, U. S. Army Signal School, Ft. Monmouth, New Jersey

have paved the way for other Army installations to use television effectively in their training mission. In addition to meeting their own training needs, the Signal Schools continue to experiment with new uses for television.

Both Signal Schools utilize image orthicon equipment (see Figure I), together with film chains (Figure II) and kinescope equipment. After nearly seven years of continuous use, previous equipment was replaced or is about to be replaced with more modern image orthicon facilities.

Television is used at the Signal Schools in the following ways:

1. *Mass training.* Whenever possible, a number of classes or large groups are taught simultaneously by an outstanding instructor over television. This is the most economical use of television since it reduces instructor and training aid requirements.

2. *Classroom adjunct training.* When used as an adjunct to conventional classroom instruction, television may be employed for

U. S. Army Photograph

Figure II

Film chain camera used in conjunction with television training facility, U. S. Army Signal School, Ft. Monmouth, New Jersey

the first 10 or 15 minutes to present materials, demonstrations, or information not readily available or feasible to present by other means in the classroom. The television receiver is then turned off, and the classroom instructor develops the remainder of his presentation. (See Figure III.) This use of television enriches the information and teaching resources available to regular classroom instruction. For example, it is invaluable when a new piece of equipment has arrived and only one unit is available; television may be used to acquaint and familiarize large groups of trainees with the features and operation of the equipment.

3. *Difficult training problems.* Many items of electronics equipment are complex in structure and contain parts buried deep and often inaccessible for viewing by more than one or two students. The close-up advantages of the television camera permit many more trainees to see small features of this equipment. Another example involves field demonstrations or exercises. Ordinarily to view such activities, troops have to march or be transported to an outlying site. Once there, it is not always possible for them to view all of the important activities. With appropriate equipment, such field activities can be transmitted by television to a classroom or auditorium site. This procedure not only reduces or eliminates marching time and transportation costs, but, more important, by focusing the television camera on the important aspects of a demonstration, insures that the personnel will see the important and critical aspects.

4. *Savings in training aid requirements.* Mention has already been made of the use of television to familiarize trainees with new equipment. It has also been found that television can reduce or eliminate training aid costs for other equipment. A major objective of training aids is to permit personnel to view small parts better by making an enlarged model. Thus there exist training aids about 6 feet high when the original equipment is about 8 inches long. Again the close-up advantages of television permit the use of actual equipment which can be seen even better by large groups of students. This is another area in which television permits economies in military training.

5. *Film transmission.* Through the use of film chains, television is used to transmit a variety of training and information films. This permits television to be used as an adjunct to ongoing classroom instruction as previously described. By appropriate scheduling at the Signal Schools, numerous classrooms receive film

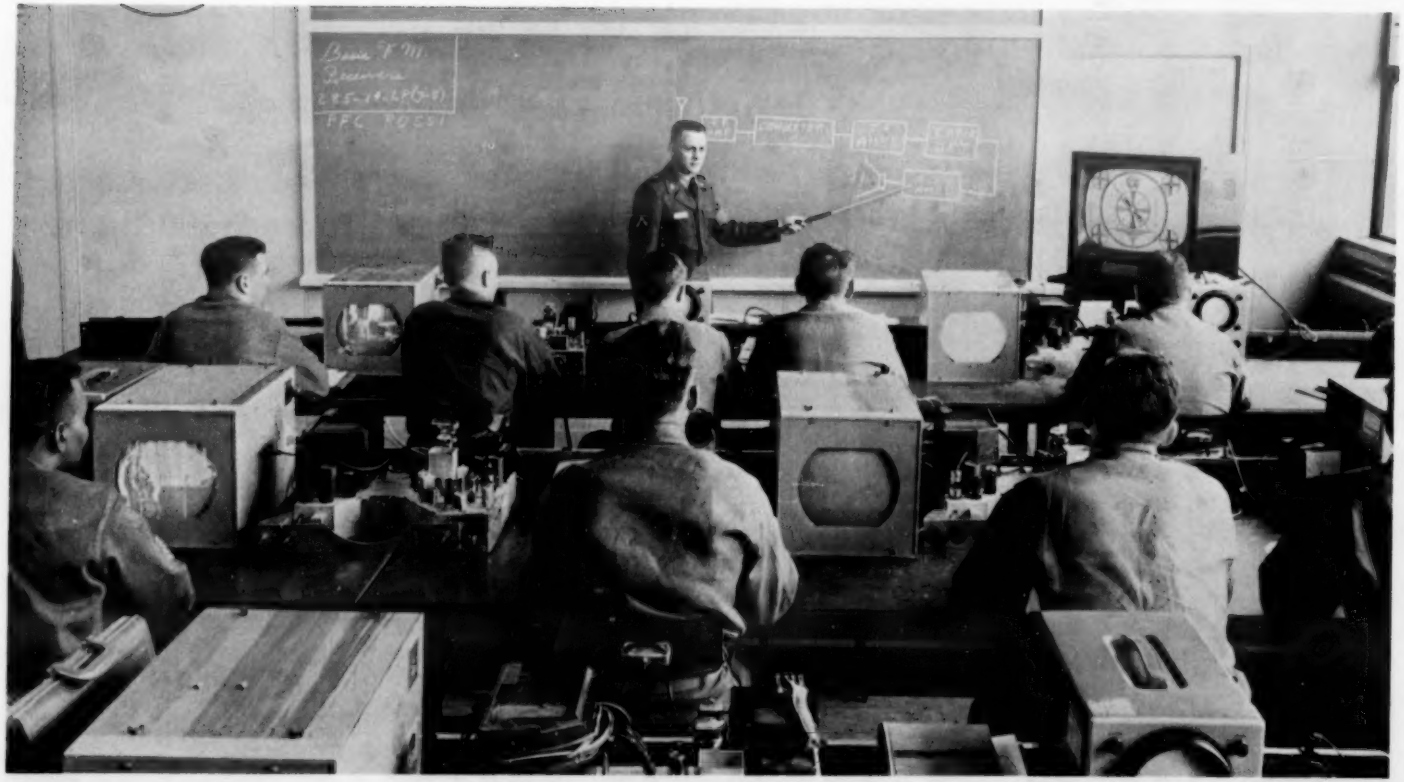


Figure III *U. S. Army Photograph*

Classroom television reception site, U. S. Army Signal School, Ft. Monmouth, New Jersey

instruction simultaneously. This use of television as a film transmission means has several advantages. It has increased the number of showings and size of audience for many films. It encourages more frequent use of films by eliminating for the instructor chores such as checking out a film and threading a projector. In addition, viewing a film over a television receiver can be done under nearly normal light conditions. This permits note taking if desired and eliminates room darkening and ventilation problems ordinarily associated with regular film projection methods.

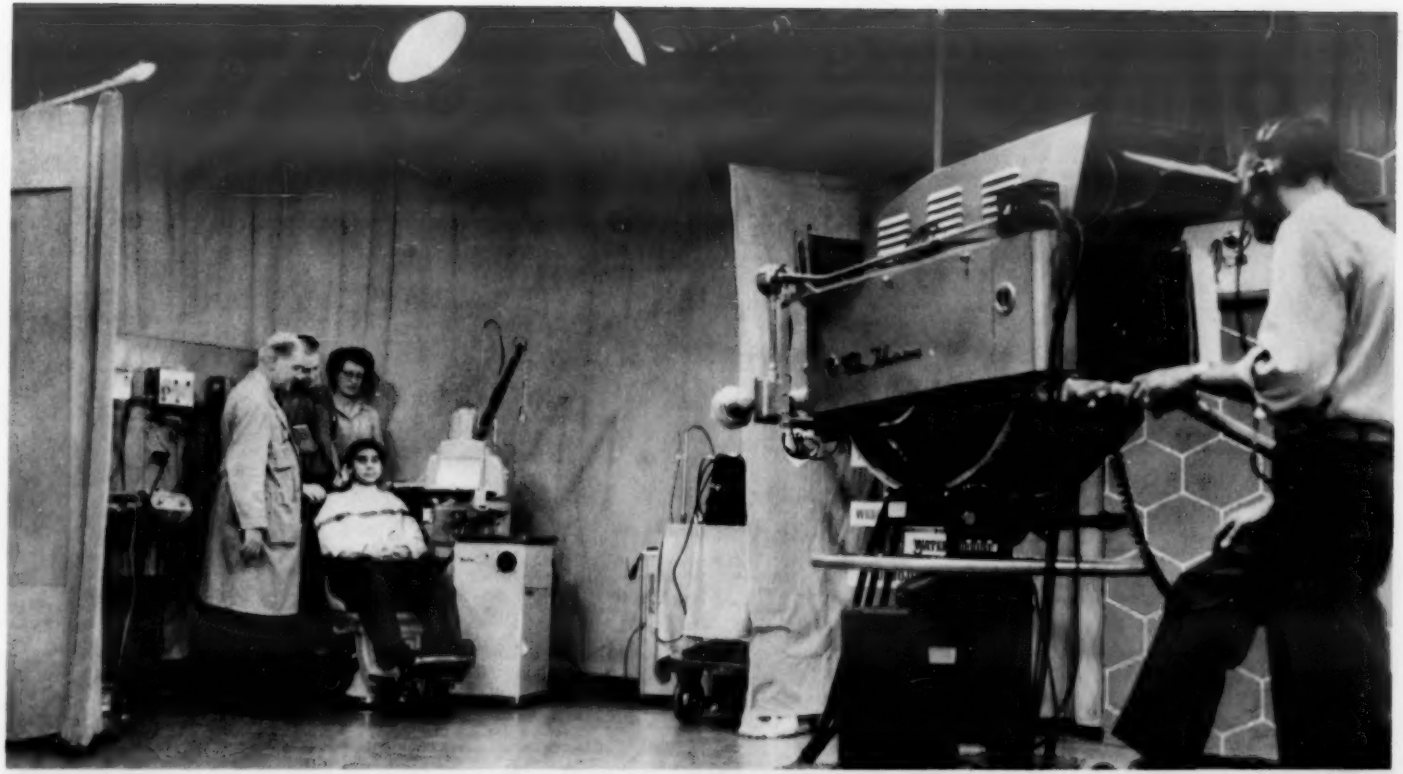
6. *Television recordings.* Both Signal Schools possess kinescope recorders which permit film recording of ongoing live television programs or specially prepared training films. Kinescopes can eliminate or reduce editorial costs which are a major film cost factor. Equally important is the rapidity with which such films can be produced and made available for many training requirements. The kinescopes may be used to supplement or replace live instruction and for review or refresher training at a later date.

Walter Reed Army Medical Center

In November 1956, installation of a compatible color television system at the Walter Reed Army Medical Center was completed. The equipment consists of four color image orthicon camera chains, three color vidicon camera chains, one film chain, and four black-and-white image orthicon camera chains. The major mission of the facility is to develop and use television for medical and scientific training and information.

At present it is used for a variety of medical and scientific presentations. These range from lectures and demonstrations (see Figure IV), surgery and autopsies (see Figure V), to panel discussions among medical and research personnel (see Figure VI). In addition, the facility cooperates with local universities in evaluating television as a teaching medium for such subjects as mathematics. Presentations are also transmitted over closed-circuit systems to medical and dental conventions.

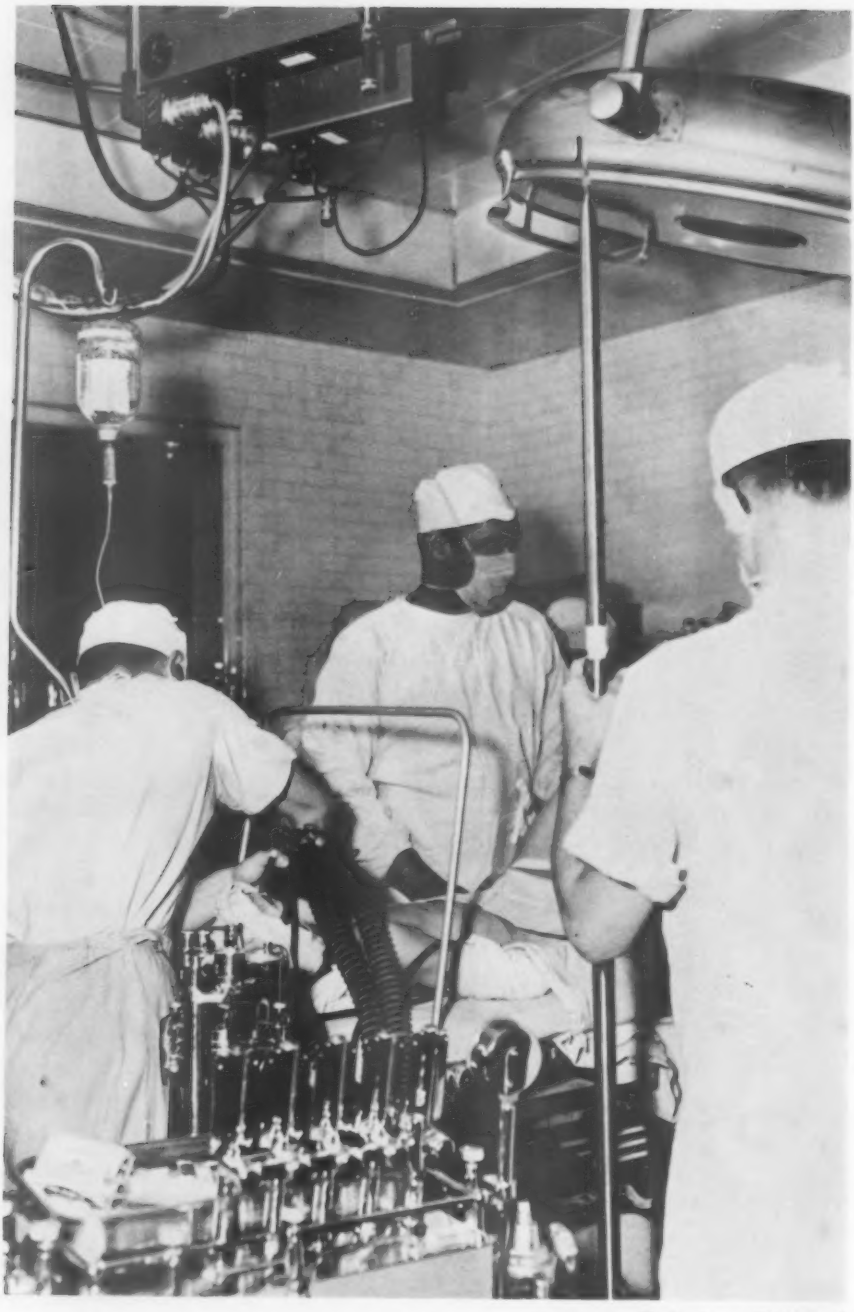
The television facility has proven successful as a means of disseminating medical and scientific information to personnel with Walter Reed Medical Center and to similar personnel at nearby military and government medical and research centers. The close-up advantages of television have been employed in surgery and autopsies so that every facet of these activities may be observed



U. S. Army Photograph

Figure IV

Television demonstration of dental procedures, Walter Reed Army Medical Center, Washington, D. C.



U. S. Army Photograph

Figure V

Operating procedures presented over television at Walter Reed Army Medical Center

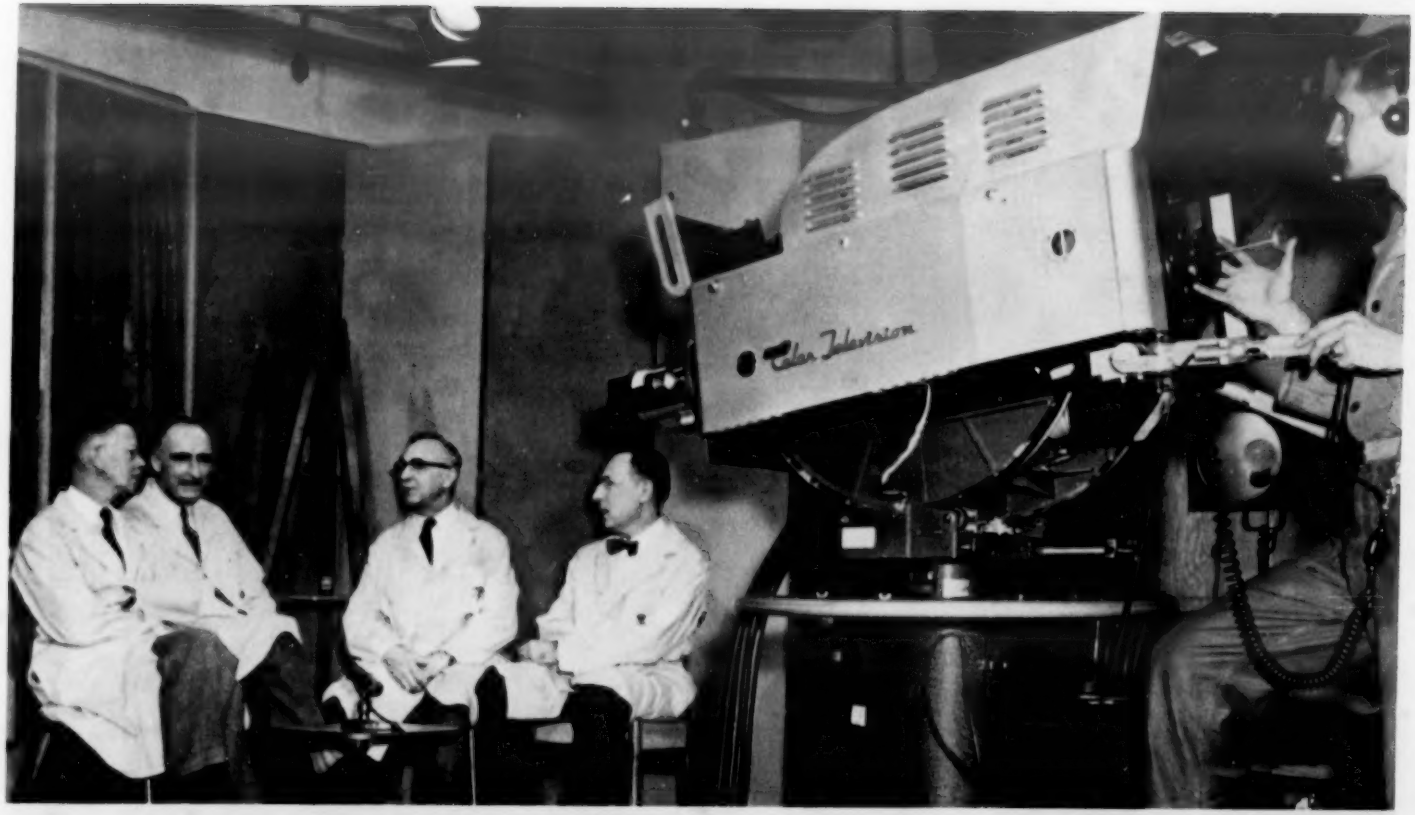


Figure VI *U. S. Army Photograph*

Medical panel discussion televised on closed-circuit system at Walter Reed Army Medical Center

by large groups in a manner not possible with the old amphitheater. A wealth of critical information is made immediately available among the various research and medical groups at Walter Reed in a manner not heretofore possible.

A 16 mm color kinescope recorder is available which can be used to record many important and critical medical and scientific programs. Future plans call for the dissemination and exchange of television programs with Bethesda Naval Medical Center and other military institutions. The common medical and research interests of personnel at these places will make television an invaluable means of rapidly exchanging scientific information and views.

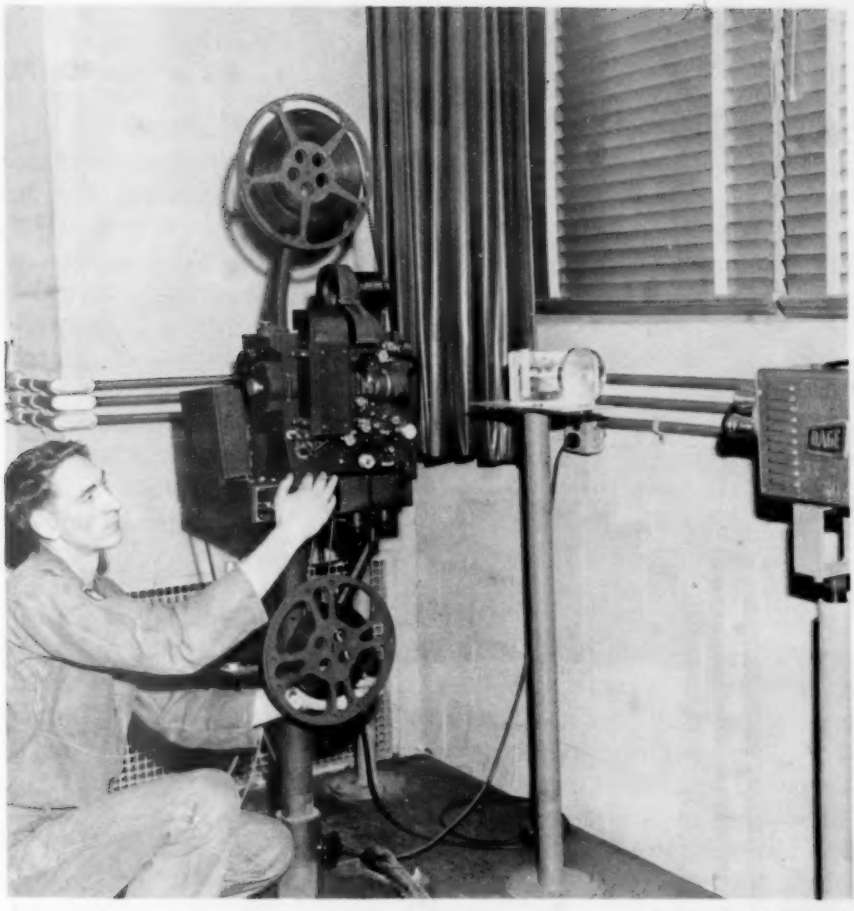
The Transportation School, Fort Eustis, Virginia

The use of television for training at the Transportation School, Fort Eustis, began in 1954. The equipment includes three camera black-and-white vidicon chains and a film chain (see Figures VII,

U. S. Army Photograph

Figure VII

Three camera black-and-white vidicon chain used by Transportation School, Ft. Eustis, Virginia



U. S. Army Photograph

Figure VIII

Film chain equipment used with closed-circuit television facility at the Transportation School, Ft. Eustis, Virginia

VIII), and microwave equipment. The major use of television is to transmit lectures and demonstrations on Transportation Corps subject matter and includes materials on automotive and engine maintenance, helicopter maintenance, and similar subjects. Future plans call for the use of television and microwave equipment to transmit ship and dock loading demonstrations to classrooms. The facility is also used as a basis for television recording of training and informational films. Existing classrooms are ordinarily used for reception sites (see Figure IX) and employ high quality receivers which can be remotely adjusted.

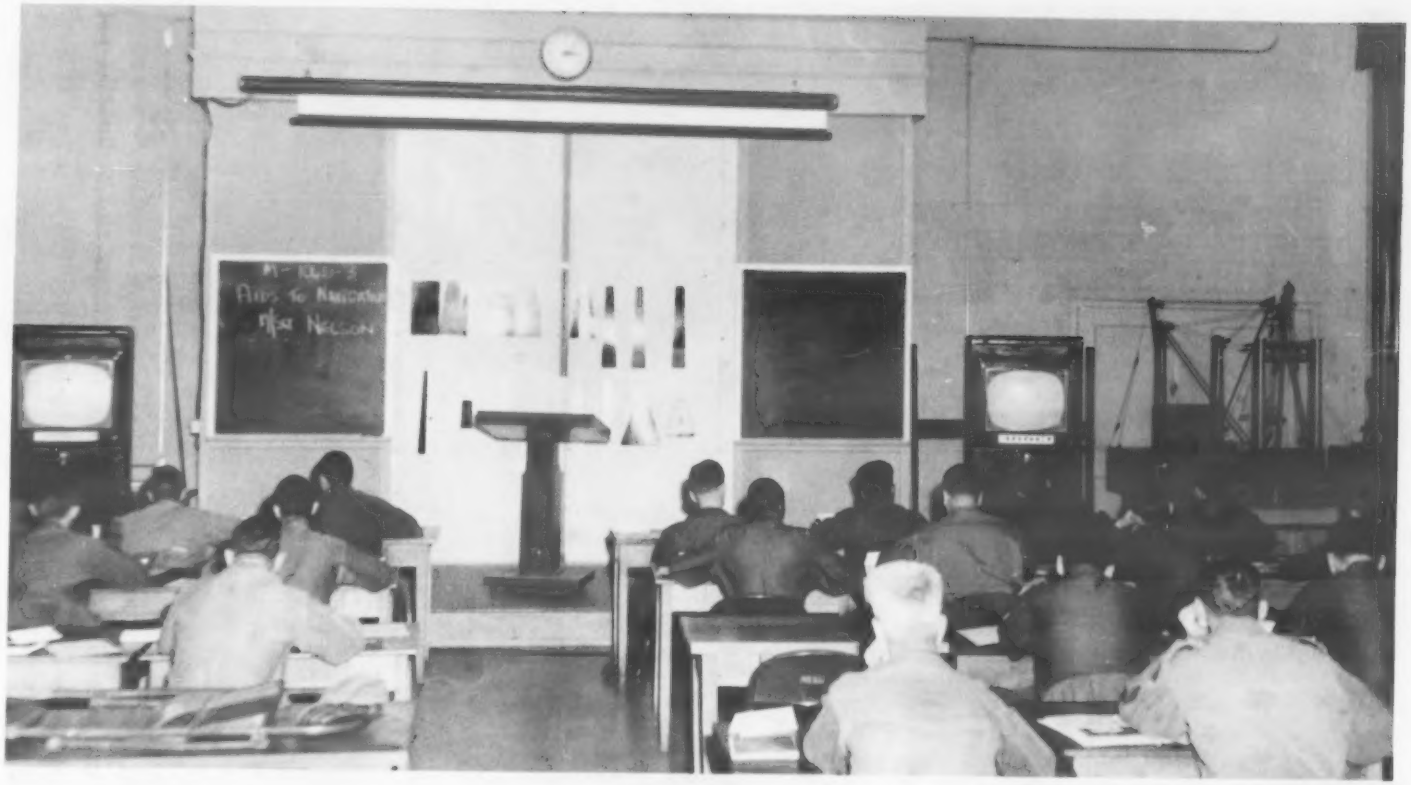


Figure IX
Television classroom, Ft. Eustis, Virginia

U. S. Army Photograph

U. S. Army Air Defense School, Fort Bliss, Texas

An important mission in the U. S. Army is the training of qualified electronics and guided missile personnel. The training of such personnel is a major responsibility of the U. S. Army Air Defense School, Fort Bliss. Television has found an important role in such training since it involves complex equipment, small, often inaccessible parts and areas, and often space limitations on trainee viewing. The television camera can increase the viewing audience for complex equipment or where space is inadequate for more than a few students.

Perhaps the outstanding contribution made at Fort Bliss has been the adaptation of television to electronic and guided missile trouble-shooting training. Guided missile equipment is large and complex, and there is a premium on its availability for training purposes. Television has been used to increase the training usefulness of available equipment and to improve the trouble-shooting behavior of trainees.

For this purpose, television is used in the following manner: Missile equipment is placed in the television studio, together with a skilled repairman. In the television classroom, holding between 30 and 40 trainees, is a two-way intercommunication system. Various troubles are injected into the missile equipment and the symptoms are shown on scopes and meters on the television receiver.

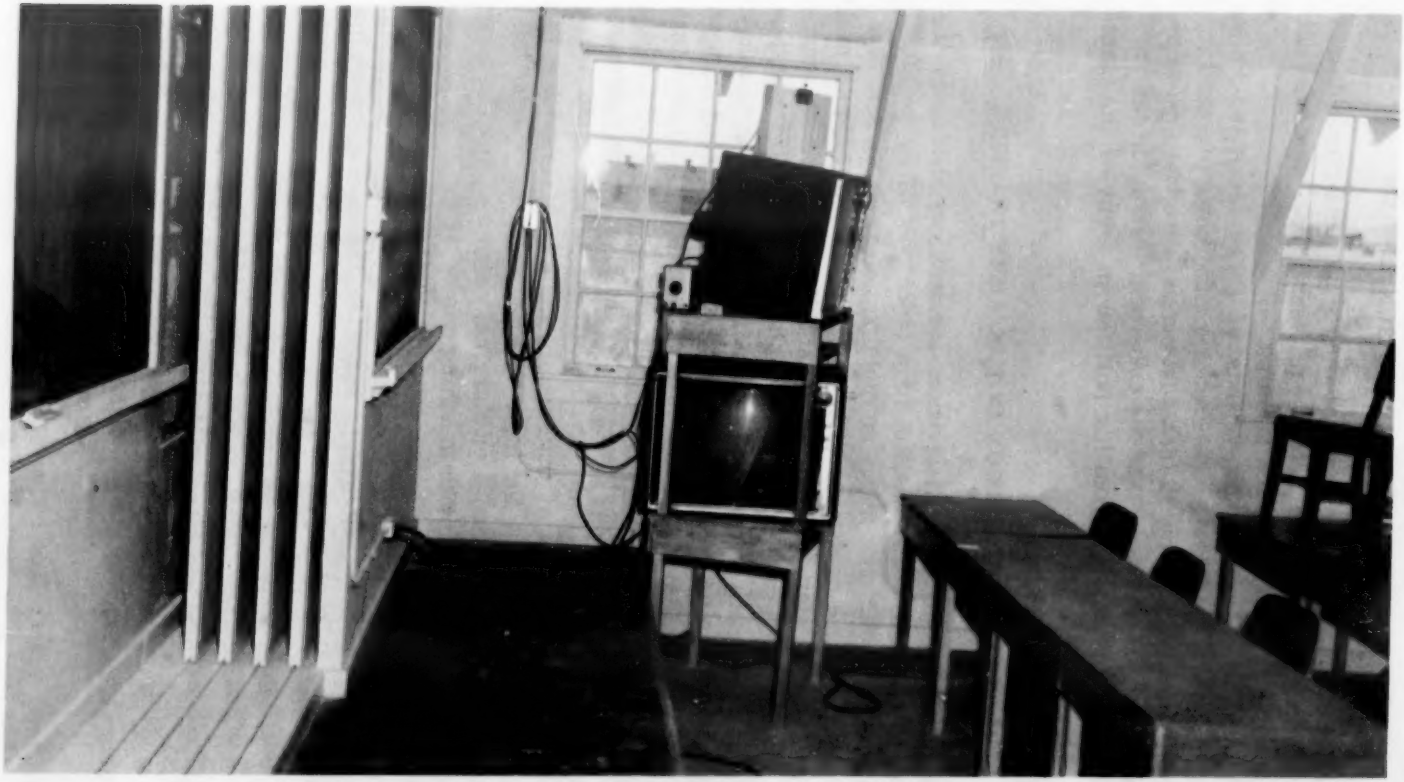
Classroom students have before them training manuals and schematics. A student, randomly picked by the classroom instructor, is then handed a microphone and told to direct the repairman in the television studio in the necessary steps for eliminating the trouble. The student asks for various meter readings, voltage readings, etc., which the television camera shows him or which the television repairman does for him. During this process, other students are watching and actively encouraging or deprecating the skill of the student guiding the trouble-shooting procedure. In an hour period, students are exposed to six or seven different types of trouble-shooting situations. This contrasts with actual time on the equipment training, in which only a handful of the students can be trained at one time in a lesser number of trouble-shooting experiences.

This procedure is not a substitute for, but is a supplement to, the equipment training. Students given this television training are acquainted with a greater variety of trouble-shooting informa-

U. S. Army Photograph

Figure X

Three camera black-and-white vidicon television system used by the U. S. Air Defense School, Ft. Bliss, Texas



U. S. Army Photograph

Figure XI

Front view of television classroom showing instructor's monitor, U. S. Air Defense School, Ft. Bliss, Texas

tion. In addition, it is reported that they show better orientation and work more rapidly on actual equipment than students not receiving this type of television training.

The television equipment consists of three black-and-white vidicon chains. (See Figure X.) Existing classrooms are used for reception sites and employ 21-inch commercial receivers. In addition, a receiver is so placed that the classroom instructor can view the television instruction from his position in front of the classroom. (See Figure XI.)

THE ROLE OF TELEVISION IN U. S. ARMY TRAINING

In its development of television for military training, the U. S. Army Signal Corps has the twin objectives of its potential use in everyday and emergency or mobilization training and communications. These objectives often overlap since techniques and findings for everyday training are generally applicable to emergency needs. The Signal Corps program has developed information and techniques which permit the application of television to many varied Army training requirements. The program is alert to new requirements; as they arise they are subjected to trial and test to evaluate the applicability of television.

Future studies will evaluate the potential of color television for other than medical training, the use of television to teach more extensive segments of instruction, the use of television for special high-speed courses for high aptitude trainees, special television courses for low aptitude or marginal personnel, and the more extensive use of television for teaching motor skills.

Television is not conceived of as a replacement for other methods of military training. Rather, it represents an additional new means of great flexibility to assist in the over-all training mission of the U. S. Army.

TEACHER AV EDUCATION VIA CLOSED-CIRCUIT TELEVISION

• G. M. TORKELSON

How effectively can an audio-visual course be taught over television? This study gives a partial answer to the problem, in addition to raising some pertinent questions for further investigation. G. M. Torkelson is associate professor of education at The Pennsylvania State University.

THE PURPOSE of this report is to record student and instructor reactions to closed-circuit portions of a basic audio-visual course taught during the spring semester, 1957, at The Pennsylvania State University. This investigation was not designed to analyze the reactions of matched groups by statistical methods but to explore through questionnaires and subjective judgments problems arising from teaching portions of an audio-visual course to advanced teacher-trainees.

It was hoped that definite answers would be obtained to the following questions:

1. What content of an audio-visual course would seem most adaptable to television teaching?

2. What would be student reactions to various methods of television presentations?

3. How would students respond to different kinds of groupings for television teaching?

4. What specific communication problems would arise out of teaching audio-visual content on television?

5. What would be the generalized and specific feelings of students to television as a communication medium?

6. What judgments might be made about future teaching of audio-visual content on closed-circuit television?

ORGANIZATION FOR TEACHING

In deciding how to organize for television teaching, the instructor selected content material which in his judgment could best be taught via television—that which normally might be of the lecture-demonstration type and that which might have the widest possible application for a heterogeneous group. While it was true that the 130 individuals in the course were homogeneous from the standpoint of intention to enter some phase of teaching, they were decidedly heterogeneous when assessed for areas of specialization. The group was composed of juniors, seniors, and some graduate students representing a wide diversity of specializations, from elementary teacher candidates with varied areas of interest to high school candidates with training concentrated in a few of the many subject-matter fields. Normally, the audio-visual course was multi-sectioned, requiring several instructors. Because of this need for several instructors, it was felt that investigating the possibilities of television teaching might lead to some alternative arrangements were qualified manpower not readily obtainable. The one common hour of television in this investigation relinquished seven class hours a week. However, much of the time saved in class hours was spent in preparation for television teaching. Whether the saving of faculty time and the meeting of faculty emergencies are justifications for teaching via closed-circuit television must be decided by the comparative merits and problems of television teaching with nontelevision teaching.

The one common hour for television was held on Friday afternoon during which 130 members of the audio-visual course assembled as a large group or as four sections in separate viewing rooms. During the ensuing week, the students met in eight smaller groups, ranging in size from a dozen or so to about 25 members per section. In these sections other aspects of the course which were felt best adapted to small group demonstration-discussion were presented. One additional hour of the week was spent in a laboratory situation where 10 to 12 students per section were taught equipment operation.

The author conducted the television sessions as well as two of the small discussion groups. A part-time instructor taught the remaining six smaller sections, while a well-qualified graduate assistant taught the equipment practicums. The author had taught the basic course many times in the previous eight years at The Pennsylvania State University and also had had seven years teach-

ing in the social sciences in several high schools in the Midwest and in another university. Although this was the first experience of any length that the author had had in teaching via closed-circuit television, he did have previous training in television and some experience in radio broadcasting.

The course was organized in such a way that the television presentation was intended as an introduction and discussion of a topic that was to be elaborated upon in the smaller discussion sections. However, it was sometimes difficult to control uniformity of the follow-through, thus reducing the effects of the course continuity. This seemed to underscore the lack of transfer on the part of the student where no complete effort could be made to develop transfer in the small groups.

Four types of arrangements were used in the television presentations, hereafter designated as types A, B, C, and D.

A. Large Lecture Hall—Instructor and TV camera present:
The instructor was present in a large lecture hall for four sessions with 130 students, using six 24-inch receivers and a camera in the room to magnify the visuals employed during the lecture.

B. Large Lecture Hall—Instructor remote:
For one session the instructor taught from the TV studio with the 130 students viewing from the large room.

C. Small Viewing Rooms—Instructor remote:
For five of seven sessions the instructor taught from the television studio with the students divided among four rooms. The class sizes were 24, 24, 34, and 48. One additional session was presented by a guest instructor. In another session a colleague of the instructor taught with several student demonstrators.

D. Large Lecture Hall—Instructor present; TV remote:
For the discussion of 2 x 2 slides, where color was felt necessary, the students and instructor assembled in the large lecture hall using appropriate materials and equipment. The television system was used only to project a film on the operation of a light meter.

Table 1 outlines the content of the various sessions and specifies the materials and the type of arrangement used in each.

TABLE 1.—CONTENT AND MATERIALS OF TELEVISION SESSIONS

Session Number	*Arrangement*	*Content*	*Materials*
1	A	Orientation to communication	Charts, motion picture—"The Children Must Learn"
2	A	Materials in learning process—material classification	Charts, chalk board
3	A	Realia as teaching media	TV camera and parts
4	A	Motion picture characteristics	Charts
5	B	Film & drawings in technical subjects	Drawings, motion picture—"How TV Works"
6	C	Flat pictures media—student panel	Charts, large photo prints
7	C	Field trip, introduction (asst. director of film library as guest)	Motion picture—"Field Trip," charts, film library forms
8	C	Evaluation of motion picture for concept development	Motion picture—"Nomads of Jungle," film evaluation forms used by students, charts
9	C	Demonstration as teaching technique (colleague and students)	Models, chalk board, charts, papier-mâché
10	C	Recordings	CBS recording "Battle of Gettysburg," with flat pictures and 2 x 2 slides of battlefield
11	D	35mm photography—2 x 2 slide	Slides, film on light meter
12	C	Models in teaching (guest instructor)	Math models
13	C	Feltboard & graphs, cartoons	Feltboard, materials, graphs, cartoons, C. Bannister baby pictures for introduction

METHOD OF GATHERING STUDENT REACTIONS

During the first television session, the instructor emphasized that (a) the television portions of the course were to be regarded as experimental with the purpose of seeking answers to the prob-

lems of presenting audio-visual content via television, and (b) the students were to regard their own evaluations of the television presentations as part of their preparation in becoming "communications-conscious." Forms were provided at the beginning of each television session for recording student reactions to (a) the applicability of content to their interests, (b) the materials used during the presentations, and (c) the methods employed. Space was provided on the reaction sheets for additional comments.

During the first part of the semester the reaction sheets handed in by students after presentations were anonymous. It became apparent, however, that a few students were voicing a considerably negative attitude through facetious comments, ignoring the appeal for constructive criticisms made at the outset of the course. It was felt by the instructor, therefore, that requiring a signature on the reaction sheet would help overcome the facetiousness and lead to serious evaluation. As a result of this change in procedure the problem became negligible but did not diminish the directness of comment. It is the judgment of the writer that where a strong opposition to something was felt, the students voiced it. Where the students felt the presentation to be of some merit, they did not hesitate to make remarks of commendation.

At the last television meeting, the students answered a five-page questionnaire which covered all aspects of the television presentations. The following items are from the questionnaire. Some items are not included because either they were considered relatively unimportant to this report or because the students did not respond to certain items in large enough numbers to draw conclusions. For purposes of brevity, some items are condensed in form.

ITEMS AND RESPONSES IN FINAL QUESTIONNAIRE

1. How many television courses have you participated in prior to the audio-visual course?

No course	48=37%
One course	54=41%
Two courses	17=13%
Three courses	11= 9%
	130

Reaction to previous course or courses

Unfavorable	41=34%
Neutral	25=21%
Favorable	55=45%

2. Would you avoid enrolling in a television course if you had a choice?

Yes	81=62%
No	28=22%
Neutral	21=16%
	130

The reason given by 75% of the group who responded "yes" for discontent with television courses concerned the feeling of impersonal, mass-production education.

3. What is your general reaction to the television portion in learning about audio-visual materials and methods?

No value	38=29%
Some value	89=68%
Great value	4= 3%

4. How did mechanical problems in television transmission affect your attitude? (i.e., video—no audio; audio—no video; losing "loops" in television film projection)

Made me completely negative	7= 6%
Irked me, but not to point of refusal to look	53=41%
Overlooked as "one of those things," but interfered with learning	37=28%
Occurred so frequently that I developed a generalized negative attitude	33=25%

In fairness to those involved in the experiment, it should be pointed out that television rehearsals were almost nonexistent because of tremendous demands on the television facilities.

5. If the pressure of university enrollments and shortage of faculty necessitated the use of closed-circuit television for future audio-visual courses, which technique would be most adaptable to television presentation?

First six in rank order:

1. Use of models in teaching
2. Presentation of graphs, feltboard, cartoons

3. Process of evaluating motion pictures
4. Demonstration technique
5. Field trip preparation—discussion
6. Still picture utilization.

Least favored was lecture-discussion type presentations. This was substantiated by a later question which asked what method of presentation was liked least. Lecture type presentations were mentioned most frequently as least liked.

6. If all the televised content of the audio-visual course were to be taught by the instructor to the entire group (130) in a large room with all appropriate projectors, *without* television, would you have preferred this "no television" arrangement to:

   a. Class in large room—instructor present—television supplementing?

      yes—71=60% no—47=40% (116 responses)

   b. Class in large room—instructor or television remote?

      yes—73=63% no—43=37% (116 responses)

   c. Class in small television receiving rooms?

      yes—78=67% no—38=37% (116 responses)

7. Indicate your general television viewing preference by checking one of the following: (120 responses)

   a. I prefer television viewing in small rooms. 75=62%
   b. I prefer television viewing with a large group in a large room. 45=38%

The reason given most frequently for "small room" viewing was that this arrangement was like the more intimate classroom atmosphere and permitted fewer distractions from hearing and seeing the presentation, i.e., fewer inattentive, talkative students to interfere with the television presentation.

8. Do you believe upper level courses should be taught via television?

   yes—15=13% no—97=87%

The 15 who voted "yes" did so on the condition that students participate in the television presentations. The great majority answered "no" because they felt upper level courses required discussion and the more individualized teaching precluded by television.

9. What type courses do you think best suited for television? "Survey-lecture" and "demonstration" type courses mentioned most frequently.

10. Do you think television teaching requires more "gimmicks" to maintain your interest level than required in a face-to-face session with the instructor?

    yes—100=81% no—46=37%

11. Did the absence of color in the television presentations affect adversely your receptiveness to what was presented?

    yes—80=63% no—46=37%

CONCLUSIONS

Of the six questions listed at the beginning of this report, the writer feels that the summary of the questionnaire contains definitive answers to items 1, 2, 3, and 5. There remains, however, the necessity to elaborate upon items 4 and 6. Item number 4 asks, "What specific communications problems arise out of teaching audio-visual content on television?" From the experiences reported here, the writer would list the following as areas for further investigation:

1. Upon what basis are examples selected for demonstration which will motivate the greatest number of students to react positively to the presentation? Individual student reactions ranged from completely negative to highly positive on the same session. This range occurred frequently enough among the television presentations to underscore the problems of motivating a large heterogeneous audience.

2. To what extent might examples of audio-visual materials usage, illustrated in various subject and grade level contexts and applications, be "canned" (as in films) for viewing as "outside" assignments the same as outside reading is assigned? This might perhaps eliminate the use of television completely for those courses requiring the meeting of widely diversified interests and special applications.

On the other hand, the reality of viewing actual use of audio-visual materials in public school classrooms via remote closed-circuit television, may help teacher-trainees make applications to their own subject specialties more easily than when illustrated and

discussed by lecture-demonstration. However, this remains to be proved.

3. How does one determine the type of teacher personality most adaptable to television presentations? The writer received comments which ranged from negative reactions to personality to commendations for "professional quality."

4. How much overt activity should be required of the television audiences (i.e., evaluating a film over television by writing answers to specifics regarding the problems of "teaching" with the film)? Some of the most favorable reactions to the various television presentations were received as a result of the "film evaluation" procedure.

5. To what extent does involving the peer group in television presentations enhance student interest? There were some indications in this investigation that some students preferred peer participation. Others, again, were critical of this procedure. The problem remains of determining in what areas peer participation is most useful.

6. To what extent are the student reactions to various types of audio-visual materials used in television teaching valid? There remains the need for careful experimentation with different forms and methods for presenting and using graphics, recordings, films, filmstrips, slides, photographs, realia, models, et cetera. To this must be added the need to investigate the relationship between testing pictorially and teaching pictorially. It seems true that if the requirements of a course are primarily verbal mastery and verbal feedback, then the use of pictorials and other sensory aids remain in the realm of the "incidental-and-hence-insignificant" category.

In regard to question number 6, "What judgments might be made about future teaching of audio-visual content on closed-circuit television?" the writer would like to comment further by rephrasing the question. "In the light of past experience, under what conditions would the writer proceed, were the basic audio-visual course to be taught again on closed-circuit television?"

The use of television would be limited to that content about communications which the author feels is a common need for all teacher-trainees, and which could be presented as the logical content of "communications" exclusive of subject or grade level preference of the teacher. At this point some may question the problem of transfer of "communication principles" to real situations when

"learned" out of the practical context. The writer contends, however, that there is a basic content to an audio-visual course which can be separated from subject and grade areas. Among the ideas in defense of this position is the belief that special emphasis upon applications for social studies, mathematics, and science in every presentation at best is limited in scope by the very time allowed for the course and by the heterogeneity of student specializations and interests. The writer's experience of the past nine years in teaching audio-visual courses indicates that teachers are not prepared for effective over-all communication if the emphasis of a basic audio-visual course is equipment operation and, "What do I do in *my* subject area and class level?" Rather, the basic concepts about the "whole" of communications should be placed in the broader context of what is known about media, about learners and conditions for learning which can aid the teacher in wise selection and utilization of instructional media.

Other evidences which support this point of view are the unsolicited comments of students who feel that the approach described is more beneficial to them in preparing to teach than an attempt to bring in examples for every subject in order to satisfy all the students. Students have pointed out that when the content of an audio-visual course is well presented in the broader context, they can make their own application to the special methods of their subject emphasis.

It is with this orientation that the "core" of future television presentations can be suggested:

1. Review of basic theories of learning as related to communication.

2. Role of audio-visual instructional materials in the communication process.

3. Classification of audio-visual materials to illustrate inherent qualities and limitations as instructional media placed in the concrete to abstract continuum. This would be presented as separate from applicability to school subjects; that is, no attempt would be made to present examples for every subject.

4. Methodology with audio-visual materials as precluded or demanded by:

   a. Types of learning objectives (i.e., attitudes, concepts, skills).

b. Types of learners with differing abilities, interests, and preferences.

c. The very nature of the materials, i.e., a three-dimensional device inherently requires a treatment differing from a flat map or graph.

In addition to the above, the author would insist on the following for television teaching:

1. Extra precautions would be observed to insure unobtrusiveness of the mechanical aspects of television.

2. Evaluation would require careful observation of pictorials with some form of pictorials used in testing.

3. When possible, some type of responses—whether overt or covert—would be required of the viewer during the presentation.

4. The remainder of the course would involve smaller discussion-demonstration sections without the use of television, and organized as far as practicable into homogeneous groups according to general grade level and subject emphasis. It would be hoped that for each major subject area specially made teaching media could be produced in some self-teaching form (short films, filmstrips) to provide illustrations of selection and utilization of audio-visual materials. These would be assigned the same as outside reading. The success of such an arrangement would certainly depend on adequate viewing-listening facilities. Technologically these are possible. Whether this arrangement would be accepted philosophically, psychologically, or financially remains to be seen.

REPORTS IN BRIEF

From time to time, short articles, research studies, and reports on methodological procedures will be published. They should be submitted to the Editor in the same form as full-scale articles and should not exceed 2000 words in length.

TELEVISION: ITS EFFECTIVENESS IN NINTH-GRADE SCIENCE TEACHING

• V. ANTHONY CHAMPA[1]

THE CURRENT shortage of trained scientists and science teachers in this technological era has created a problem requiring experimental data to aid in its solution.

Statement of the Problem

This investigation was planned to explore the potential of television in helping ninth-grade pupils learn more science as well as predisposing them to pursue further study in science with a view to making a career in the field.[2]

Procedure

Three relatively comparable groups of ninth-grade science pupils from the two junior high schools of Lancaster, Pennsylvania, were used in this experiment. This involved approximately 60 percent of the ninth-grade population in the city of Lancaster, and the sections to form the groups were selected to represent as wide a range of abilities as possible. Of the 300 pupils used in the statistical calculations, the number of boys and girls in each group was evenly divided. Since matching the groups was not possible, they were equated statistically on the bases of a pretest, mental

[1] The author is professor of education, State Teachers College, Millersville, Pennsylvania.

[2] WGAL-TV, Channel 8, Lancaster, Pennsylvania, provided public service time, and RCA furnished television receiving sets for use in the classrooms for the duration of the experiment which ran from mid-September 1955 to mid-May 1956.

age, and attendance record. Analysis of covariance was the statistical technique used.

Varied treatment of the three groups was as follows:

1. The Conventional Group, *C Group,* was taught as nearly like the teachers had taught ninth-grade science the year before as possible, using neither television nor the motion pictures selected for this experiment.

2. The Television Group, *TV Group,* was taught the same course of study as the Conventional Group, but 30 minutes of their regularly scheduled class time was used to receive two quarter-hour television programs each week during most of the school year.

3. The Motion Picture Group, *MP Group,* was taught the same course of study as the Conventional Group, but the equivalent of 30 minutes of their regularly scheduled class time was used to view the two films also used each week with the Television Group. Like the Control Group, the Motion Picture Group did not have the benefit of the science resource people used on television. However, when the Television Group did not receive a film as part of a telecast, the Motion Picture Group was provided with a film to cover the same topic. For example, when the local weather man provided a whole television program to explain how weather is forecast, the Motion Picture Group was shown the film on *How Weather Is Forecast.*

Four cooperating teachers taught one section in each of the three groups. The course of study was developed by the cooperating teachers and the coordinator of science and mathematics, but the telecast and motion pictures used were selected by the experimenter.

Alternate forms of the Cooperative General Science Test (High School) were used as pre- and post-test unit tests, and retention tests constructed by the author were also used. Attitudes toward science were measured by a fall and spring administration of the Kuder Preference Record, Form CH (there is no alternate form). Pupils' science-related activities were also measured in the fall and spring by a locally constructed survey form.

Findings

Tabulation of adjusted mean scores, which were not actual means but expected means based on statistically equated groups,

revealed the fact that the control groups were consistently low. See Table 1.

TABLE 1.—COMPARISON OF GROUP RESULTS IN ACHIEVEMENT

	C Group	*TV Group*	*MP Group*
Boys	53.36	54.37	53.38
Girls	47.52	48.52	49.31

While the TV Group did best among the boys and the MP Group did best among the girls, none of the differences were statistically significant. Correlation of the post-test criterion with the cumulative total of unit test scores was .88, and with the final retention test composed of items drawn from the nine unit tests it was .77.

When differences in gains between pre- and post-test scores were tested for significance, a definite pattern appeared. For both the boys and the girls the rank order from high to low was MP, TV, and C Group. In all cases the differences were significant at the .01 level of confidence.

Only the MP girls gained significantly more in science-related activities between the fall and spring survey when compared with the C girls. Differences as measured by the fall and spring administration of the Kuder Preference Record again showed the MP girls as being the only subgroup gaining significantly more than any other subgroups.

Pupils favored the use of telecasts and motion pictures almost unanimously.

A greater proportion of all the pupils in the experiment were found to be pursuing the study of more science one year after the experiment was terminated than had been the case with previous classes; pupils who had been in the TV and MP Groups were slightly higher on their persistence to study more science.

The cooperating teachers recognized value in both telecasts and motion pictures. They felt that television as used in this experiment did not unduly regiment their teaching.

Implications and Conclusions

Television would seem to offer considerable promise in encouraging young people to prepare for a science career. Since boys did so much better than girls, and since the pretest scores were by far

the best predictors of achievement in science, perhaps girls as well as boys should be introduced to science before they reach the ninth grade. Television could help teachers do this.

The teachers in this experiment welcomed help in the achievement of objectives with which they concurred. Such professional atmosphere can help pave the way for new approaches to learning at a time when research on teaching by television has just begun.

Suggestions for Further Study

This experiment was primarily concerned with the effect of two 15-minute telecasts per week upon science conceptual learning and improvement of attitude toward science in the ninth grade. Suggestions for further study that emerged from this experiment can be stated as questions.

1. Would a greater difference in learning accrue if this experiment were repeated, with more class time devoted to teaching by television, and, if so, is there a point of diminishing returns in learning as the proportion of class time utilized for teaching by television is increased?

2. Does the proportion of class time utilized for teaching by television affect pupil reaction to teaching by television?

3. Would kinescopes of the telecasts be valuable for review?

4. Would elaborate, professionally programmed and produced teaching telecasts be superior to educational telecasts primarily concerned with a good teaching preparation?

ATTITUDINAL AND PREFERENTIAL FACTORS OF SELECTED MALE HIGH SCHOOL STUDENTS WITH RESPECT TO TELEVISION VIEWING

• JOSEPH K. BALOGH

A RANDOM sample of 103 boys from the sophomore, junior, and senior classes of a metropolitan high school located in Lucas County, Ohio, was obtained for this study. These data were uni-

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formly distributed among the three classes. The sample appears to be a good cross section of a heterogeneous area; it is somewhat rural, and yet closely adjacent to the urban life of Toledo. The subjects are representative of such socio-economic levels as the wealthy, the lower class farmers, and the average family. It is felt that this random sample constitutes a representative proportion of all the variables in the statistical universe represented by this particular high school.

Purpose of Study

1. To classify attitudes of high school boys and their parents regarding televiewing
2. To classify differences of opinion that exist between high school boys and their parents with respect to program selection
3. To classify differential phases of behavior among sophomores, juniors, and seniors in terms of such criteria as hours of watching, types of programs, parental influences, sibling position in the family, and attendance at movies
4. To classify the positive influences that TV has on the three classes in terms of study, recreation, and program discrimination
5. To classify and determine the relationship, if any, that exists between hours devoted to televiewing and hours devoted to study
6. To classify and determine the relationship, if any, that exists between hours devoted to televiewing and hours devoted to recreation
7. To classify and determine if the family size pattern can be construed as an influential factor in determining individual behavior patterns.

Methodology

A schedule was administered to the members of each class as a group by an instructor in the high school. The students were encouraged to be truthful in their statements. They were also instructed to answer all questions as thoroughly as possible. Further, the students were told to raise their hands if some phase of

the schedule was not clear to them. All data were obtained anonymously.

The data were classified into tables and interpreted statistically. Two sets of Pearsonian product-moment correlations were run: first, between the number of hours of televiewing and the time devoted to study; and, second, between the number of hours devoted to televiewing and the time devoted to recreation. These correlations were run for all three classes. The following statistical procedures in addition to percentages were computed: standard error of correlation, critical ratios, and probable error of correlation.

Findings

This study has many limitations. It is much too dangerous to generalize beyond the scope of one's statistical universe. There is, unfortunately, no universal research tool available that can, *ipso facto,* measure TV and its many related phenomena. This is particularly true when the researcher is attempting to quantify and objectify social attitudes. Definitive studies are very few in this research area. It must also be remembered that research tools are merely approximations, since human behavior can never hope to lend itself to absolute measurement.

Some important findings borne out in this study are:

1. Television research is still very much in a beginning stage.
2. There is no significant correlation between the number of hours spent on televiewing and the number of hours devoted to study.
3. There is no significant correlation between the number of hours spent on televiewing and the number of hours devoted to recreation.
4. The average sophomore watches television approximately 20 hours a week, the average junior watches television approximately 15 hours a week, and the average senior watches television approximately 10 hours a week.
5. In all three grades, more time is spent on the average watching TV on Sundays (3 hours and 15 minutes) and Saturdays (3 hours and 8 minutes) than on any other days of the week.

6. The average sophomore devotes 20 hours each week to televiewing, 15 hours to study, and 20 hours per week to recreation.
7. The average junior devotes 15 hours and 30 minutes each week to televiewing, 10 hours to study, and 14 hours per week to recreation.
8. The average senior devotes 10 hours each week to televiewing, 8 hours to study, and 17 hours per week to recreation.
9. Juniors and seniors devote approximately one-fourth of their total time in the week to televiewing, study, and recreation, while the average sophomore devotes approximately one-third of his total time to these same pursuits.
10. All three classes prefer to do their studying without the assistance of televiewing.
11. TV as an aid to obtaining better grades is still a highly debatable issue since only slightly more than 5 in 10 stated that their grades improved because of televiewing.
12. Disagreements over TV program selections tend to decrease as the subject approaches his senior year.
13. Over-all, about 6 out of 10 subjects state that there are no disagreements over program selections.
14. In selecting programs, there is a strong tendency to choose the more informative and educational.
15. The greatest parental and subject cooperation in program selection appears to be in the tenth grade.
16. Seniors exercise a greater degree of independent selection of TV programs than do both the sophomores and juniors.
17. In all three classes, better than 7 in 10 parents do not prohibit all or some television programs.
18. Parents of sophomores tend slightly to be more prohibitive towards certain TV programs.
19. In all three classes, nearly 9 in 10 parents do not limit the number of hours in which TV can be viewed.
20. Most parents objected to TV programs involving sports.

RELATIONSHIP OF INCOME LEVEL TO THE EFFECTIVENESS OF AN EDUCATIONAL TELEVISION FILM

• ELEANORA L. PETERSON

THIS STUDY was designed to measure differences of opinion of a high-income and a low-income group of students with regard to a 13-minute color film of a clothing construction process—namely, how to make piped buttonholes. The buttonhole film was one of a series of 13 clothing construction films prepared for use on TV.

The study was designed to investigate the relationship between opinions regarding the buttonhole film and family income level and to secure reactions as to the value of the film for use on TV. Therefore, effort was made to ascertain the characteristics that make for superior quality in a teaching film of this type.

Hypotheses

The null hypothesis was that there is no difference between the ability of the high-income group and of the low-income group to evaluate the effectiveness of the film as a teaching medium. A sub-hypothesis was that if the two groups reveal differences between their discriminating abilities, the differences may be due to factors connected with their income level. Economic necessity is thought to be a powerful motivating influence in home sewing. For that reason, it was the variable selected.

Sample

The two schools included in the study were chosen by the Los Angeles City homemaking supervisor as representing the extreme ends of the high-low income continuum. The clothing classes selected in each school were those scheduled during sixth period. The pupils were eighth- and ninth-grade girls. There were 32 in the high-income group and 24 in the low-income group. Clothing courses at this level in junior high school are elective. Consequently, the vast majority of pupils in Los Angeles taking the

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elective clothing courses, designated J1 or J2, have had at least one semester of required sewing instruction in the seventh grade. Neither of the two teachers whose classes were included in the study had taught her pupils how to make a piped buttonhole resembling the type shown in the film. This lack of experience was regarded as an advantage for the purposes of this study, since the groups—insofar as this type of experience was concerned—did not vary in amount of previous experience.

Method of Investigation

The questions and items used in the questionnaire were the result of comments and criticisms of students in five clothing construction classes at U.C.L.A. The experience of these students in making piped buttonholes ranged from none in the elementary textiles and clothing class to a great deal in the tailoring class.

The teacher of the high-income group prepared her pupils by telling them they were to be a preview audience at a "Hollywood premiere." The teacher of the low-income group told her class they had been especially "chosen" to view the film.

The investigator made every effort to standardize the conditions through the introductory discussion of her reasons for showing the film. She read the questionnaire to the high-income group and answered pupils' questions regarding the terminology and meaning of some of the questions.

The teacher of the low-income group read the questionnaire to her pupils the day before they saw the film, explaining to them the meaning of some words they did not understand. Both the investigator and the regular teacher were kept busy answering questions during the time the class was reading and checking responses. Several of the slowest pupils remained beyond the end of the period in order to complete the questionnaire.

Analysis of Data

Three experts, clothing teachers in the Department of Home Economics at U.C.L.A., independently rated the items in the questionnaire in terms of each item's indication of discrimination. The chi-square table was used to determine the significance of difference between responses of the two groups. There were three possible responses to each question, making possible a table with two columns (high and low income) and three rows, or two degrees of

freedom. However, Guilford[1] recommends when there are less than five responses to a single item that two items be combined. This recommendation was followed, thus allowing one degree of freedom, and Yates's correction for continuity in small samples under 50 was applied.

Results

The two groups were quite similar with regard to no previous experience. Only 19 percent of the high-income group and 13 percent of the low-income group had had no other sewing instruction. However, approximately 10 percent more in the latter group (34 percent versus 45 percent) had received previous sewing instruction in the eighth and ninth grades, indicating only a slightly greater degree of experience. None of the low-income group had made a buttonhole of any kind and only nine percent of the high-income group had made a machine-worked buttonhole. Therefore, neither group had any experience in the method shown in the film.

Over half of the low-income group considered the speed with which the lesson was presented about right, whereas 75 percent of the high-income group thought the speed was too fast. It is possible that the former group was not alert enough to realize how much of the lesson they were missing. On the other hand, their greater amount of experience may indicate more ability to follow the instructions at the speed they were presented.

The high-income group was generally more favorable toward the film, with only 12 percent giving a negative response versus 34 percent in the other group. The higher percentage of unfavorable responses in the low-income group would seem to contradict their approval of the speed of the film. However, their disapproval of the film in general may be due to factors other than speed, as responses seem to indicate.

One-third of the high-income group believed that their mothers could make a buttonhole, following the method in the film, if their mothers saw the film on TV. Only 13 percent of the low-income group gave the same response. If clothing construction films for TV are to be of value to homemakers they must be understandable to women with varying amounts of education and experience.

[1] Guilford, J. P. *Fundamental Statistics in Psychology and Education.* New York: McGraw-Hill, 1950. p. 283.

TABLE 1.—OPINIONS OF PUPILS FROM HIGH- AND LOW-INCOME LEVELS REGARDING THE TEACHER'S ROLE IN THE FILM

Teacher's Role	More		Less		Same	
	High	Low	High	Low	High	Low
	Percent		Percent		Percent	
The camera should be focused on the teacher's face rather than on her hands	0	0	41	83*	56	17
The camera should be focused on the buttonhole rather than on the teacher's hands	56	75	3	8	41	8
The teacher should have mentioned the advantages of this kind of buttonhole	53	100*	13	0	31	0
The teacher's instructions should have been repeated	56	67	3	0	41	33

* Difference significant at the 1% level.

On the questions pertaining to the teacher's role, the low-income group was more discriminating, as shown in Table 1.

The responses of the low-income group to questions pertaining to possible distractions in the film were especially interesting. See Table 2. In general, this group showed a higher degree of dis-

TABLE 2.—OPINIONS OF PUPILS FROM HIGH- AND LOW-INCOME LEVELS REGARDING POSSIBLE DISTRACTIONS IN THE FILM

	Distracting		Not Distracting		Made No Difference	
	High	Low	High	Low	High	Low
	Percent		Percent		Percent	
The teacher's clothes and jewelry	44	29	9	25	47	46
The pincushion on the teacher's wrist	63	54	6	13	31	33
The window in the background behind the teacher	9	4	35	42	56	54

Note: Where responses total less than 100%, it is because pupils failed to respond to a given item.

criminatory ability in evaluating the film than the high-income group. One exception was with regard to the teacher's clothes and jewelry. She was wearing a brown skirt and beige overblouse, a large and ornate silver medallion, and an elaborate Mexican silver belt. Forty-four percent of the high-income group considered them distracting while only 29 percent of the low-income group were of that opinion. This may be due to the tendency among low-income groups to use more ornamentation and to place less reliance on "elegant simplicity" as a criterion of being well dressed.

Another deviation from the item considered by the experts as most discriminating concerned a curtained window in the background behind the teacher. The experts considered it distracting, whereas over 50 percent of each group felt that it made no difference, and less than 10 percent considered it to be distracting.

TABLE 3.—OPINIONS OF PUPILS FROM HIGH-INCOME AND LOW-INCOME LEVELS REGARDING TECHNIQUES THAT WOULD IMPROVE THE FILM

	Yes		*No*		*Undecided*	
	High	*Low*	*High*	*Low*	*High*	*Low*
More emphasis on where to place guide basting for location of buttonhole	69	83	6	8.5	25	8.5
More emphasis on how to crease and baste the small strip of fabric for the buttonhole	53	71	16	8.0	31	17.0
Buttonhole magnified or a large-scale model buttonhole shown	59	62	6	13.0	31	25.0
Light fabric stitched with dark thread	72	67	19	29.0	9	—
A dull fabric used rather than a shiny fabric	41	71*	31	12.0	28	17.0
Contrast in color between the piping (lips) of the buttonhole and the background fabric	50	83*	13	8.5	37	8.5
Diagrammatic drawings or animated drawings (like cartoons) showing individual steps in construction	75	71	9	17.0	16	12.0

* Difference significant at the 5% level.

On all questions dealing with ways to improve the film in order to help the viewer understand how to make a piped buttonhole, the low-income group was more discriminating, as shown in Table 3.

Summary

The low-income group showed greater discriminating ability in evaluating the effectiveness of the film for teaching purposes. In other words, they expected higher quality from a film of this kind. Perhaps this difference might be accounted for by a greater interest in sewing due to economic necessity.

Some of the opinions expressed regarding this film seem to point up a need for collaboration between film producer and educator in the production of motion pictures to be used for educational purposes. Teachers of home economics are vitally interested in the use of color for more effective educational films, especially for TV. They are also concerned that high standards be maintained in such productions.

The relationship between income level and the potential TV audience for a film of this type is indicated in the results of a recent study. In a nationwide survey of women and girls over 12 years of age, McCall [2] found that 65 percent of the women who sew do their own sewing to save money. They are mainly married women between the ages of 25 and 39 who are able to watch daytime TV programs.

As the use of color TV increases, it is possible that commercial firms will be more interested in sponsoring such programs as a public service. Therefore, the quality and the teaching effectiveness of clothing construction films is of major importance to home economists. Furthermore, the audience for these programs will probably resemble more closely the mothers of the girls in the low-income group. This audience is likely to be more critical and discriminating than one drawn from upper-income homes.

[2] *The Woman Who Sews.* Volume III of a Continuing Study of the Pattern and Piece Goods Customer. New York: McCall Corporation, 1954.

EDUCATIONAL TELEVISION—A GOOD COMPETITOR?

• LLOYD F. SCOTT [1]

IN ADDITION to the many fine educational programs that in increasing numbers are found to be the fare of those television channels devoted exclusively to noncommercial educational use, there are many programs on our country's commercial television channels that are either truly educational or informational. These programs must, then, compete with the total production of all commercial channels for attention.

A recent study in the San Leandro Unified School District gave some indication as to the manner in which programs of this nature are meeting the total competition. The study also set about to find differences, if they existed, between those children of sixth- and seventh-grade ages who view many of these programs and those children of the same levels who view few of these programs.

The experiment was carried out in four randomly selected schools in San Leandro, California. Within these schools the study was confined to 15 classrooms of sixth- and seventh-graders with a total enrollment of 456 students.

The general pattern of the study was to have children check the programs they viewed, validate their responses, and arrange distributions indicating total time per week devoted to viewing programs of an educational or informational character [2] and proportion of total viewing time that was devoted to such programs. Comparison of the upper and lower 27 percent of each of these distributions should reveal whether differences exist between children more devoted to educational programs and children less devoted to educational programs on the following factors:

1. achievement in reading, arithmetic, language, and spelling
2. intelligence quotient
3. personal and social adjustment
4. educational and leisure-time interests
5. occupational rating of parent.

[1] Lloyd F. Scott is assistant professor of education, University of California, Berkeley, Calif.

[2] Designations of programs considered educational or informational were based upon a list provided for the three available television channels in the area of study and published by the Educational Television Research Association. *ETRA Research Bulletin.* No. 1. March 1954.

Such differences, if found, should indicate a possible constant relationship between the characteristic in question and the educational television viewing pattern under consideration.

As may be seen from Tables 1 and 2, the comparisons of upper and lower groups on academic and intelligence characteristics revealed no significant differences. Comparisons between these groups on occupation of parents, personal adjustment, social adjustment, leisure-time interests and in-school interest revealed no differences of significance. This result would seem to indicate that any child, regardless of his educational characteristics or qualifications, is as likely to choose programs of an educational or informational character as is any other child. This certainly would be contrary to contemporary educational knowledge and belief.

The answer is found in the competition referred to earlier. The fact remains that programs with these informational and

TABLE 1.—RELATIONSHIPS BETWEEN PROPORTION OF EDUCATIONAL VIEWING TIME AND SCHOLASTIC ACHIEVEMENT FACTORS AS REVEALED BY COMPARISON OF UPPER AND LOWER GROUPS IN PROPORTION OF VIEWING TIME DEVOTED TO EDUCATIONAL VIEWING

Characteristic	*Group*	*Mean*	M_1-M_2[a]	*CR*[b]	*Disposition*[c]
Arithmetic Educational Quotient	Upper	91.61	−.90	.695	Not significant
	Lower	92.51			
Reading Educational Quotient	Upper	93.39	2.05	1.296	Not significant
	Lower	91.34			
Language Educational Quotient	Upper	94.24	1.79	1.365	Not significant
	Lower	92.45			
Spelling Educational Quotient	Upper	94.34	1.01	.567	Not significant
	Lower	93.33			
Total Educational Quotient	Upper	92.48	−.06	.048	Not significant
	Lower	92.54			

[a] M_1-M_2 Difference between the means of the two groups.
[b] CR Critical Ratio.
[c] Disposition Whether or not the difference between the two groups is significant.

educational qualities, in the area in question, were not able to compete with the more standard television offerings.

The distribution of educational viewing time revealed a range of from no hours per week to 12½ hours per week. The distribution of proportion of total television viewing time devoted to programs of this nature ranged from .00 to .41. In both distributions, however, there was such a severe positive skewness that interpretations made from comparisons would be of questionable validity. The positive skewness was not due to a concentration of cases at all the lower levels of the distribution. It was due to the very heavy concentration of children who view *no* programs from the list considered educational or informational by the experts.

TABLE 2.—RELATIONSHIPS BETWEEN PROPORTION OF EDUCATIONAL VIEWING TIME AND INTELLIGENCE FACTORS AS REVEALED BY COMPARISON OF UPPER AND LOWER GROUPS IN PROPORTION OF VIEWING TIME DEVOTED TO EDUCATIONAL VIEWING

Characteristic	*Group*	*Mean*	M_1-M_2[a]	*CR*[b]	*Disposition*[c]
Language Intelligence Quotient	Upper	107.87	3.41	1.703	Not significant
	Lower	104.46			
Non-Language Intelligence Quotient	Upper	108.61	.41	.216	Not significant
	Lower	108.20			
Total Intelligence Quotient	Upper	108.29	2.14	1.227	Not significant
	Lower	106.15			

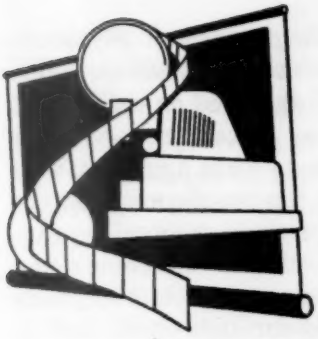
[a] M_1-M_2 Difference between the means of the two groups.
[b] CR Critical Ratio.
[c] Disposition Whether or not the difference between the two groups is significant.

It is difficult to account for this quite general pattern. Analysis of individual viewing patterns revealed very frequently what must be considered a purposeful and determined avoidance of programs of this nature.

This observation raises questions for the educational television experts when they plan programs for their allotted channels. What proportion of the population, at least the population of the pupils'

age level, can you expect to witness your presentations? My surmise is, that without some definite and complete camouflage of the educational, the proportion will remain small.

Until there is more general devotion to such programs and until the distribution of educational viewers becomes more normal, we cannot answer the questions about relationships to educational factors. Without such knowledge the planning for increasing effectiveness of these programs cannot be 100 percent efficient. Where we will break the vicious cycle only time will tell—but break it we must.



FILM

• JOSEPH L. ANDERSON

THE AMERICAN ADVENTURE

The American Adventure, a series of 13 black-and-white films produced by the National Education Program, Searcy, Arkansas, could have been an important contribution to America's understanding of itself. The series brings a promise of films for use in one of the important areas in which the audio-visual field has yet to create a body of effective materials. How many motion pictures are there which attempt to show the origins and principles which underlie the many facets of life in this country?

Lending importance to the intentions of this "course" (as the series is called by its principals) is its design for wide use among late teen age and adult audiences both in the classroom and on broadcast television. The failure to fulfill these intentions effectively raises important questions of both content and technique.

The basic setting for each of these 12-minute films is a classroom where Dr. Clifton L. Ganus of Harding College lectures to students enrolled in the National Education Program. In his opening remarks, Dr. Ganus infers that Americans need to know more about their way of life primarily because of threats to it by communism and socialism. This reasoning restricts his presentation to a nonstop, hair-splitting rebuttal of Marxist critics. When essential points about the United States go unchallenged by communists and socialists, they go untouched by Dr. Ganus. Although his conclusions obviously differ, his method requires him to take the same starting point as the Marxists: economic factors are critical in determining the patterns of history and the freedoms within a society.

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In the first film in the series, "The Beginnings at Plymouth Colony," we are told that the Pilgrims faced starvation upon arrival in this country because they were organized on collectivist principles. There is no suggestion that they lacked know-how for farming the new land and that their attempts were aggravated by unusually severe winters. Unavoidable is the conclusion that the hardships of the Pilgrims were due solely to their economic organization. As soon as they abolished their communal storehouse and each family began to produce for its own consumption, everybody prospered. Such economic analysis is found throughout the series.

On a larger scale, this overwhelming concern for the formal structure of production and distribution requires that seven of these films concentrate entirely on economic matters. The remaining six reels give lesser focus to economics but enough to keep footage on the political, religious, and social heritage of this country to a minimum. Despite this restriction on its scope, the series would have had more universal value if some of the economic factors defined by Dr. Ganus as presently operative in the United States were not closer to the ideals of laissez faire theory than to the realities of contemporary America.

Apart from reservations concerning the content of these films, there is also the question of their defective motion picture technique. This latter fault comes as a surprise following the more effective materials already released by the National Education Program. However, the inadequacies to which I refer are by no means peculiar to *The American Adventure*. They are faults found in the films of every producer.

To break away from the visual (but not aural) confines of means peculiar to *The American Adventure*. They are faults dissolves to both live and animation scenes intended to illustrate the remarks of Dr. Ganus. This is, of course, a valid technique as long as the footage expands or clarifies the meaning of the commentary.

The preparation of appropriate visuals is the most difficult job in film production. It requires considerable talent and effort to find the illustration that will effect a proper synthesis between word and image. An ever present tendency—one made worse by television with that medium's inherent shortage of time to prepare material and surplus of time to present it—is to grab at any visual

no matter how poorly its action fits the word. The error is in believing that *any* picture is worth a thousand words.

In order to analyze inaccuracies and irrelevancies in picture content, this reviewer in the past has relied on a detailed classification of the types of faulty visualization. Six of the most frequent types are listed below with examples from *The American Adventure.*

1. *Exaggeration for effect.* The concern of the educational motion picture with factual material entails a limitation on poetic license no matter how impressive the result. In the introductory film, Dr. Ganus speaks of "the spread of communism and socialism over all continents" and walks over to a map of the world. As he speaks of the growing peril, large areas of the map begin to turn black through a simple animation process. The United States is soon an almost single island of whiteness, for even Brazil, Saudi Arabia, and Greenland (especially large on a Mercator projection) change to a Marxist darkness. With most of the world black, the isolation of this country is visually effective, but how far can one stretch the criteria for calling nations socialist?

2. *Impossibility of visualizing many generalizations and abstract ideas.* Here is one of the basic limitations of the motion picture as a direct information-bearing medium. Abstraction is a necessary practice in a discussion of ideas, yet pictures seldom have the abstracting capacity of words. The narrator can speak of freedom but what one picture can illustrate it? The attempt to pictorialize every idea is to confine the learning process to one simple level of experience.

The ties that bind the visual to the specific can be only partially weakened by the substitution of generalized drawings for live photography. In the fourth film in this series, "The Fall of Nations," Dr. Ganus simplifies the Toynbee conception of history to state that all nations fall because of three-way decay—political, economic, and social. During his discussion of extinct civilizations, he mentions that ancient Egypt disappeared because "factions fighting among themselves finally destroyed the government." To illustrate this concept, we are shown a map of Egypt. Over it are superimposed oddly-shaped dots which vibrate in violent opposition to each other. Jumping beans equal warring factions. But what information does this decoration convey about the fall of a nation?

3. *Literal illustration of the narration without consideration of the context of either picture or narration.* The picture must have more than surface relevance to the narration. The film maker must be certain that his pictures are saying the same things as his narrator.

In "The Responsibilities of American Citizenship," the final film in the series, Dr. Ganus sums up past lessons when he states that to hold on to the American way of life we must not sacrifice freedom for promises of material well-being. The picture cuts to a shot of fish frying in a pan to infer that for such things as food people will surrender their liberty. But instead of continuing with the ominous meaning given to the visual by the narration, the camera pulls back to reveal happy Boy Scouts on a cook out. Satisfying their appetites did not require the forfeiting of liberty of which Dr. Ganus spoke.

4. *Visual clichés.* In the eighth film, "America's Distribution of Wealth," Dr. Ganus refers to a British socialist's surprise while wandering through an American supermarket. This Englishman wears a golfing cap, tweedy vest, and trench coat; he smokes a curved pipe and speaks effeminately.

In the sixth film "A Look at Communism," the members of a subversive cell are the sneering, foreign-accented, harshly-lit types seen so often before. The actors play their roles with eyes that shift even when they are not reading off-camera cue cards. These characterizations are not performed with tongue in cheek. The narration which accompanies them insists that they are an accurate portrayal of reality.

5. *Factually inaccurate visual material.* As with clichés, this is one of the more obvious types of faulty visualization. It often occurs when the film maker includes material because it seems impressive in itself although it may have no reference to the subject being discussed.

Anachronisms also fall into this category. When Dr. Ganus in "A Look at Communism" discusses the origins of Marxism and the appearance of *The Communist Manifesto* he begins with, "Let's go back to the beginning. In 1848, Karl Marx and Fredrik Engels published. . . ." The picture dissolves to a cell meeting. His words have carried us back a century yet on the walls of the room are pictures of Lenin and Stalin.

6. *The visualization which is sound in conception but inadequate in execution.* Early in the series, Dr. Ganus analyzes the rights inherent in the American system. As he discusses each, a "granite" block on which each right is inscribed is carried to him with considerable effort by student assistants. When each of these 22 apparently heavy blocks has been piled on top of the other, Dr. Ganus has graphically established what he calls "the structure of the American way of life." This much is an effective use and execution of a simple teaching aid.

In the closing film, he again stands before this block structure and speaks of the consequences if Americans fail to understand the obligations of citizenship. When he says the words, "the structure of the American way of life will crumble," he gently pushes the blocks. Three fall to the table top with a barely audible "plop." This sound, his indecisive gesture, the few blocks which fall are hardly an adequate representation of the magnitude of the collapse.

BOOK REVIEWS

ISAACS, HAROLD R. *Scratches on Our Minds; American Images of China and India.* New York: The John Day Company, 1958.

JONES, DOROTHY B. *The Portrayal of China and India on the American Screen, 1896-1955.* Cambridge, Mass.: Center for International Studies, Massachusetts Institute of Technology, 1955.

Reviewed by

• GEORGE GERBNER

Four months after Pearl Harbor six out of ten Americans could not find either China or India on an outline map of the world. Though jarred by the sobering jolts of the last decade, the American image of the lands where one of every three people on earth lives is still ill prepared to encompass a vision of tomorrow.

The languages we teach have little or nothing to do with the tongues spoken by two-thirds of the world's peoples. The books we venerate almost completely exclude works of greatest meaning to half of mankind. The forefront of our consciousness is occupied by the stirring but seldom enlightening headlines of the day. And in the back of our minds we see—mostly in the peripheries of our mental vision—a blurred mosaic of fantasy images, the residue of half-forgotten tales, stories, movies, comic strips, and the like, home-grown, synthetic products of long-standing inequality born of exploitation, of fear, of wishful thinking—with a pitiful smat-

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tering of classroom learnings too often tailored to fit the myths rather than designed to explode them.

The studies by Isaacs and Jones, both conducted under the auspices of M.I.T.'s Center for International Studies, represent the beginnings of a scholarly approach to the exploration of our own mass-produced mythology about the rest of the world. They are especially important for educators concerned with the reality and validity of the pictures in our minds, and of teaching materials and communication practices that help shape our images of the world.

These studies, and similar ones that should follow, can help us to become aware of the nature and often forgotten sources of our own images of the human realities of Asia. They will confront us with the nature, origin, and social functions of the images our students bring with them. And they will provide us with a challenging view of the historical, social, and cultural contexts in which these images operate—a view without which the teacher can only be flying blind.

Scratches on Our Minds uses as its springboard the results of an extensive series of interviews in which journalist-scholar Harold R. Isaacs probed for back-of-the-mind impressions and associations concerning China and India. His panel of interviewees consisted of 181 Americans, mostly prominent, well-educated, and with some degree of personal involvement in Asian affairs, and broadly representative of educational, religious, industrial, and political leadership. But a major part of the study followed the paths of investigation opened by the interviews. These paths, tracing the origins and development of views expressed in the interviews (and largely forgotten or unknown to the interviewees themselves), led into the mass media, classical and popular literature, historical sources, textbooks, folk tales, street songs, and other elements of the cultural context seen as a source of ideas and incidental learnings.

Mrs. Jones's monograph on the portrayal of China and India on the American screen was commissioned in connection with the Isaacs study, but is a valuable document on its own. It is based on an analysis of 325 motion pictures with Chinese or Indian themes shown in American theaters during the years 1896-1955. After a brief explanation of the role of American films on the world market and of the importance of Asia on the American screen, this report gives an illuminating discussion of the evolution of Hollywood's image of the "Orient" and "Orientals."

These are pioneering efforts to analyze and understand the conventional pictures in our minds about the world in which we live. They map an area of cultural and conceptual reality. The map is real in that it is a guide to thought, action, and feeling on the part of the great majority of Americans, even if, in large parts, it is dangerously misleading in terms of the material significance of the territory. This is a challenge to the teacher, the producer of educational materials, the writer, the social scientist, and the statesman. These books will help all to stand on firmer grounds of reason and evidence about the nature, extent, and dynamics of that challenge.

EDUCATIONAL POLICIES COMMISSION. *Mass Communication and Education.* Washington, D. C.: the Commission, 1958. 137 p.

Reviewed by

• PAUL W. F. WITT

Mass Communication and Education is an important addition to the professional literature. First, it is a publication of the Educational Policies Commission, an organization to which many educators look for leadership and guidance in dealing with educational problems and in the establishment of local educational policies and practices. Second, this book deals with matters of vital social and educational significance. It recognizes that mass communication has had and continues to have a tremendous influence on society, that it is an educational force of considerable potential, and that educational administrators everywhere have a major responsibility not only for communicating effectively with their staffs and the public, but also for providing leadership in developing instructional programs that will utilize fully the new knowledges and tools of communication and which will also enable the people of America to understand the nature and power of the societal influence of the mass media and to use them selectively and wisely.

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While the views presented in this publication are the responsibility of the Educational Policies Commission, the Commission acknowledges that Howard E. Wilson, formerly secretary of the Commission and now dean of the College of Education at U.C.L.A., conceived the idea of the study and that he served as a consultant both before and after his retirement as secretary. The Commission also notes that William E. Parker, on leave from his position as associate professor of journalism at the State University of Iowa, served as director of the project and as principal author of the report, and that a number of specialists in the areas of communication and education contributed to the report in the role of consultants. The Ford Foundation and the W. K. Kellogg Foundation are recognized for their contributions to the financial support of the project.

The purpose of this book is "to serve as a guide to the educator in his thinking about, and study of, the field of mass communication." Its intent is to stimulate the development of a point of view. It is not a handbook or manual.

While the book is addressed to American educators, it is actually intended rather specifically for administrators. Nevertheless, it offers interesting and important ideas for anyone concerned about education and American society, laymen and professionals alike.

The book is in two parts. Part One provides a brief general background in communication theory, practice, and research. Part Two discusses the influences mass communication has had on students, teachers, and administrators and suggests some implications for the school administrator both as "chief of instruction and as manager of the educational enterprise." This is done on the basis of four broad assumptions:

1. Mass communication has helped make a new kind of society.
2. It has given the teacher a different kind of student to teach.
3. It has modified the role of the teacher and the administrator.
4. It has provided educators with new tools which can improve teaching and increase learning.

In developing a background for the reader, the communication process is defined "as consisting of the use of a set of symbols, through a channel or channels, to convey a message which produces

These are pioneering efforts to analyze and understand the conventional pictures in our minds about the world in which we live. They map an area of cultural and conceptual reality. The map is real in that it is a guide to thought, action, and feeling on the part of the great majority of Americans, even if, in large parts, it is dangerously misleading in terms of the material significance of the territory. This is a challenge to the teacher, the producer of educational materials, the writer, the social scientist, and the statesman. These books will help all to stand on firmer grounds of reason and evidence about the nature, extent, and dynamics of that challenge.

EDUCATIONAL POLICIES COMMISSION. *Mass Communication and Education.* Washington, D. C.: the Commission, 1958. 137 p.

Reviewed by

• PAUL W. F. WITT

Mass Communication and Education is an important addition to the professional literature. First, it is a publication of the Educational Policies Commission, an organization to which many educators look for leadership and guidance in dealing with educational problems and in the establishment of local educational policies and practices. Second, this book deals with matters of vital social and educational significance. It recognizes that mass communication has had and continues to have a tremendous influence on society, that it is an educational force of considerable potential, and that educational administrators everywhere have a major responsibility not only for communicating effectively with their staffs and the public, but also for providing leadership in developing instructional programs that will utilize fully the new knowledges and tools of communication and which will also enable the people of America to understand the nature and power of the societal influence of the mass media and to use them selectively and wisely.

Paul W. F. Witt is professor of education at Teachers College, Columbia University, New York.

While the views presented in this publication are the responsibility of the Educational Policies Commission, the Commission acknowledges that Howard E. Wilson, formerly secretary of the Commission and now dean of the College of Education at U.C.L.A., conceived the idea of the study and that he served as a consultant both before and after his retirement as secretary. The Commission also notes that William E. Parker, on leave from his position as associate professor of journalism at the State University of Iowa, served as director of the project and as principal author of the report, and that a number of specialists in the areas of communication and education contributed to the report in the role of consultants. The Ford Foundation and the W. K. Kellogg Foundation are recognized for their contributions to the financial support of the project.

The purpose of this book is "to serve as a guide to the educator in his thinking about, and study of, the field of mass communication." Its intent is to stimulate the development of a point of view. It is not a handbook or manual.

While the book is addressed to American educators, it is actually intended rather specifically for administrators. Nevertheless, it offers interesting and important ideas for anyone concerned about education and American society, laymen and professionals alike.

The book is in two parts. Part One provides a brief general background in communication theory, practice, and research. Part Two discusses the influences mass communication has had on students, teachers, and administrators and suggests some implications for the school administrator both as "chief of instruction and as manager of the educational enterprise." This is done on the basis of four broad assumptions:

1. Mass communication has helped make a new kind of society.
2. It has given the teacher a different kind of student to teach.
3. It has modified the role of the teacher and the administrator.
4. It has provided educators with new tools which can improve teaching and increase learning.

In developing a background for the reader, the communication process is defined "as consisting of the use of a set of symbols, through a channel or channels, to convey a message which produces

a response." It is made clear that this process always occurs in a personal context. The elements, *message, channel, context,* and *response* are discussed briefly. Care is taken to note that there is much yet unknown about the process of human communication.

Important developments in communication are reviewed starting with face-to-face oral communication and going on to printing, photographic reproduction, radio, and television. The important fact that each new method of communication does not replace established methods but extends and enriches the pattern of communication is made clear.

There is a glimpse of mass communication as a business enterprise in which it is noted that as in all big businesses in the American economy keen competition for the consumers' purchases has brought about lower unit costs for the buyer, a high degree of uniformity in the product, and a tremendous increase in production costs. The trend toward monopoly and concentration of ownership is mentioned.

The nature and extent of the influence which advertisers, business interests, pressure groups, and consumers have on mass communication are discussed.

In the chapter devoted to mass communication and changing social conditions attention is given to the relation of the mass media to the development of uniformity in American life, the possibility of manipulating people, the establishment of public recognition and acceptance of ideas, personalities, and organizational endeavors, and the conduct and control of public and international affairs.

Chapter III touches briefly on research in communications. The nature of propaganda, public opinion, effectiveness of training and orientation materials, and the size and character of magazine, newspaper, radio, and television audiences are mentioned as areas of communications research. By referring to 19 important communication research reports which are listed in an appended bibliography, a brief outline of some broad conclusions about the way in which the communication process works is presented. (An important value of this publication is that it introduces its readers to these research reports.) Topics discussed include the complexity of the process of communicating meaning, the problem of misperception, the importance of attention, the influence of social context, the significance of existing attitudes, and the long-term cumulative effect of communication.

Part Two of this book consists of three chapters and a brief conclusion. In this part "attention is concentrated on the implications for education of the rise of the mass media and the growth of communication research."

In analyzing the effects of the mass media on today's student it is argued that he is a new person. It is pointed out that today's student is much more widely informed. The author reminds the reader that young people have had contacts with a multitude of persons, places, and events beyond the limits of their immediate physical environment. However, he wisely observes that "the new knowledge, vicariously and easily arrived at, is not necessarily profound, meaningful, or even accurate." He points out that the choices made by those who control the mass media influence markedly the views which consumers develop. He notes too that while today's students have had a rich array of vicarious experiences via the mass media, they have had a marked reduction in firsthand experiences as compared to their fathers and grandfathers. This he reminds his readers has had a significant effect on their learning.

Other important facts regarding the influence of mass communication on young people which are discussed are the great increase in the commonality of experience, the acute awareness which youth acquire of sharing these experiences with large numbers of their peers, and their strong response to status accorded by the mass media. Noted too is the point that "modern mass communication has provided the basis for a more widespread kind of conformity than was likely to exist before."

Reference is made to communication research to emphasize again that personality differences do influence individual response and to point out that opinions and the quantity or accuracy of information may not be closely related and that individuals generally are not clear as to the sources of their information.

The implication drawn is that a new approach in education is needed for the new student. He must be helped to organize his knowledge and to identify its actual meaning. He must be taught to know and understand the true nature and operation of the mass media and to use them selectively. He needs to learn that the mass media can misinform as well as inform and that they can build undesirable as well as desirable attitudes. Today's student must also be helped to see the necessity of developing independence of thought and attitude and be supported in the development of the courage of his convictions. As stated in this book, "The development of the

will to dissent and the techniques of effective dissent are another part of the obligation of education."

Chapter V is focused on the teacher. It indicates that developments in mass communication have been major factors in causing a change in the status and role of the teacher. The mass media have made possible acquaintance and daily experience with a great many authority figures. This, in turn, has been responsible for a lessening of the authority of the teacher. Mass communication has also taken from the teacher the large measure of control he once had in determining what was to be learned. The elaborate techniques of presentation and entertainment so characteristic of the mass media are intense competition for the teacher in the classroom.

The role of the teacher in mid-twentieth century is summarized in the following quotation:

> Today's teacher, then, cannot define the areas of relevance in education to the extent that his predecessor did. More than ever, education is obviously much broader than the three R's, and the teacher must have a wide breadth of interest himself. Further, he must be able to place these oddly-assorted bits of information in context, to make them add up. He must, if he is to be effective, capitalize on this new outside learning and give it direction. It is not enough simply to acquire sufficient information to be able to defend himself from the questions of the bright student. The teacher must see himself as one of a series of sources of information and experience.

On the other hand, it is pointed out that communication developments have contributed new knowledge about the communication behavior of people individually and in groups and have created many new devices which have high value for education.

In discussing the fact that research in communication supports research in education the author notes that people learn as whole individuals, that groups with which the individual is associated have strong influence on his learning, that the origin of the communication is significant, that face-to-face communication is most effective (a fact which places teachers in positions of greatest advantage and responsibility), that active participation facilitates learning, that learners choose messages they think will be the most rewarding, that level of educational achievement is a good predictor of communication behavior, that the learner tends to select materials most readily available, and that specific rather than abstract messages are more easily understood and acted on.

With reference to new devices for teaching, it is contended that they should be used widely although appropriately. Wide

neglect of audio-visual materials and methods despite their established effectiveness is observed. A plea is made for a use of a variety of methods. Considerable attention is given to the educational possibilities of broadcast and closed-circuit television. Stressing the fact that the educational values of this medium are still not firmly established, educators are urged to continue exploration of its usefulness in teaching. Emphasis is placed on the need for effective utilization of the medium by skilled teachers. The author does see television as a means for releasing the classroom teacher to a great extent from the task of presenting information which would enable him to devote more time and attention to guiding the learning experiences of his pupils.

The sixth chapter suggests implications for the school administrator as "(1) chief of instruction and (2) manager of the educational enterprise." With reference to program there is a brief discussion of grouping, achievement standards, materials, special learners, and the study of communication in the curriculum.

The planning and construction of buildings which facilitate effective communication in teaching, the need for proper and adequate budgeting for a variety of materials, careful selection of well-prepared and flexible teachers, and the importance of effective in-service education programs are discussed in considering the managerial functions of the administrator. Considerable attention is also given to the importance of effective school-community communications and several suggestions for its achievement are offered.

After reading this book, reviewing its content and manner of presentation, and reflecting on its significance, this reviewer offers the following observations:

1. This book and the several other general publications on communication and education are needed to keep educators (administrators, supervisors, and teachers) constantly aware of the nature and importance of mass media in our society and to stimulate them to work faithfully on the development of ever more effective ways of using the newer media of communication in teaching and learning. However, emphasis must be placed on the point that these general works are just that—general. Communication is a tremendously complex process. The impact of the mass media on our lives is subtle, but extremely potent! The educational potential of the newer modes and methods has been only tapped!

2. Consequently, the study of communication, its role in education, and the character and operation of the mass media should be important areas of the curriculum of elementary and secondary schools and colleges and universities. Teacher preparing institutions should be certain to give special emphasis to these matters.

3. Communication and its implications for teaching and learning should also receive regular and careful attention in in-service education programs.

4. Furthermore, the public should be helped to learn about these matters and made aware of the need for supporting this aspect of the educational program.

5. And, there is need for much research and study of communication and its significance in teaching and learning.

RESEARCH ABSTRACTS

FILM

TWYFORD, LORAN C. *Michigan Educational Film Libraries.* Audio-Visual Center, Michigan State University, East Lansing, Michigan. June 1958. 20 p.

Purpose: The purpose of this research was to determine the distribution and utilization practices of educational motion pictures in the state of Michigan. This information is of use in the formulation of policy and in assessing the degree of development of audio-visual programs at the city, county, regional, and state levels.

Procedure: A questionnaire was developed with the assistance of Audio-Visual Center staff members to discover the types of film libraries in existence, the number and types of film distributed, estimated size of film audience, number of film bookings, availability of other types of visual aids, groups served and service charge policy, services performed to aid film users, sources of operating funds, and method used for selecting films. In addition, the respondents were asked to state problems which should be studied in later research studies. They were asked to recommend methods for improving film usage.

The questionnaire was sent to 63 libraries which were thought to have more than 50 films. Follow-up letters were sent to those not responding. A cross-check was made to assure that all libraries were reached.

Results: 57 film libraries responded and their answers were classified and issued as a printed report which will be given to the respondents for use in their programs. Almost half of the responding libraries were associated with city school systems. The prints of films in the state amounted to 51,141, of which most were educational in nature. The estimated audience for the year numbered 40 million. Each booking was estimated to represent 2.66 showings. The average number of persons seeing each showing was 58. Films were estimated to have 28.7 showings per year for city school systems and 11.6 showings per year for film libraries serving the state. There were more filmstrips distributed than films. Practically all the support for procuring audio-visual materials comes from local school appropriations. Local school systems provide free service to schools within the system whereas libraries serving the state charge rental fees. Larger film libraries generally provide the most extensive services to their users. Problems raised for further study concerned questions of use, status of audio-visual programs, costs and mechanics of operating a film distribution center.—*L. Twyford*

TELEVISION

MERRILL, IRVING ROGERS. *U. S. TV Credit Course Enrollment, Fall Semester, 1954-55.* WKAR-TV Research Report 556M, Michigan State University, East Lansing, Michigan. 20 p.

Purpose: To compare enrollments in all U. S. television credit courses offered during the fall semester or winter quarter of 1954-55. This consisted of developing a basis for comparison of enrollments and of determining the relationship of subject matter, population density, type of station, geographical area, method of instruction, units of credit granted, and the length of course to comparative enrollment.

Procedure: A survey was made of the 18 institutions of higher learning which offered TV credit courses. A questionnaire was developed for this purpose. Comparison of enrollment was accomplished by using a formula: $C_E = \frac{E}{H} \times 100{,}000$. Where C_E was the comparative enrollment in terms of enrollment per 100,000 TV homes, E was the actual number of enrollees and H was the number of TV homes within the area of the telecast.

Results: It was found that 22 TV credit courses in the area of arts and sciences were offered. Almost half were in social science while one-third were in language and literature. Total enrollment was 4016 with 620 for credit and 3396 on a noncredit basis. An estimated 372,000 other viewers watched the programs each week. The largest enrollment was for a psychology course. The average credit course had 6.68 credit enrollees and 35.21 enrolled for noncredit. Social sciences attracted the largest number of enrollees. Population density and whether the program was telecast over a commercial or educational station seemed to have little relationship to comparative enrollment. Greater enrollment occurred when television replaced regular class attendance. Least enrollment occurred when television was used as an aid to correspondence course instruction.—*L. Twyford*

KLAPPER, HOPE LUNIN. "Does Lack of Contact With the Lecturer Handicap Televised Instruction?" *The Journal of Educational Sociology* 31:353-59; May 1958.

Purpose: To discover whether it is important for an instructor to lead discussion groups associated with television courses.

Procedure: Two social science courses were offered by closed-circuit television. "Man's Cultural Heritage" was offered twice and "History of Civilization" was offered once. 364 students took the courses which consisted of televised lectures lasting about 50 minutes followed by class discussion. Course material emphasized ideas and relationships. Two of the discussion leaders

were relatively inexperienced in the course content. Two of the television lecturers led discussion sessions.

Results: Students having a discussion leader who was not the television lecturer learned at least as much as those having the television lecturer. Attitudes toward the televised course did not suffer as a result and students did not think the televised instruction was too impersonal. It was clear that students did not need personal student-teacher contact with the television lecturer in order to favor educational television. The faculty felt that it was undesirable to have discussion sessions immediately after the televised lectures.—*L. Twyford*

CARPENTER, C. R.; GREENHILL, L. P.; and OTHERS. *An Investigation of Closed-Circuit Television for Teaching University Courses.* Instructional Television Research Report No. 2. The Pennsylvania State University, University Park, Pennsylvania; Spring 1958. 110 p.

Purpose: To study the comparative effectiveness, appropriateness, acceptability, and feasibility of employing closed-circuit television for teaching university courses. It was desired to discover the strengths and weaknesses of closed-circuit television for accomplishing specified training and for achieving educational goals.

Procedure: Approximately 20 controlled experimental studies were conducted to study the comparative effectiveness of conventional instruction and television instruction. Generally the same teacher taught both groups using the same methods and covering the same material. Students were assigned randomly to the two groups. In studying the appropriateness of television to university teaching a wide range of courses was employed. Approximately 4000 students were taught by television each semester. This involved approximately 50 hours of televised instruction each week. Several methods which were employed were: (a) televising courses in their entirety, (b) televising lecture-demonstrations with conventional recitation periods, (c) television used to magnify instructional materials, (d) television for observing remote events, and (e) television for professional training. Also some television lectures were originated in a large classroom and others in a small room without students or with a few selected students. Several methods of providing for discussion were investigated. Studies were made of proctors for television rooms, providing graphic materials for television presentations, and presenting tests over television.

To study the acceptance of television, questionnaires were given to some of the 15,000 students and 45 teachers who had been associated with the project during the four years it has been under way. Also general faculty attitude was sampled. Behavioral choices were made by students who were free to decide whether they would attend televised or conventional classes.

Reactions were obtained by university administrators, trustees, and the public. A critical evaluation was made by a panel of educators assembled for that purpose. To determine the feasibility of the system, records were kept on costs of equipment, labor, instructional costs, and operational problems. Costs per credit for television was plotted against conventional costs. Work continued on kinescope recording of courses and on the use of new television equipment.

Results: Learning and retention from conventional and from televised courses were found to be essentially the same in all courses tested. This was found to be so even when a textbook was not used in the course. No decrease in learning was noted when students sat closer than 12 screen widths from the receiver. Class size was not found to affect learning adversely. For some types of courses proctors may not be necessary. Lack of opportunity to ask questions did not reduce learning although students wanted to be able to ask them. A significant decrease in learning was found when an air science course was visualized using charts, models, films, pictures, and dramatizations. When a psychology course was visualized extensively, no improvement could be measured.

Concerning appropriateness, a small originating room was found to be best for teaching over 200 students using a professional vidicon chain. No advantage was found for having students in the originating room. Although favored by students and teachers, a two-way communication system had no effect on achievement. It was found to be desirable to provide mimeographed class notes rather than having students copy them from the screen. If a team of instructors teach a course, the optimum number is two. A regular projector with a slight modification can be used to project films over a vidicon chain. The most widely used types of television presentations were straight lectures and those with graphic visuals. Administration of tests by television appears to be highly feasible. Vidicon cameras can be used for professional training in television techniques. The use of television to increase image size where instruction involves demonstrations of small objects appears to be justified. Regular classrooms can be used for instructional television; however, new buildings should be planned to include it. Many university courses can use television to advantage.

The acceptance of television instruction by instructors was varied. Students generally accepted televised instruction. Administrators supported the project fully. An observer panel found the work challenging, lacking in high pressure promotion, efficient, and comprehensive.

In terms of feasibility, the radio frequency transmission system was found to be adequate. The television operating staff members were largely new to the television field. Televised instruction was much less costly than conventional instruction when classes of 200 students were taught. The equipment used was dependable and easy to operate.

At present approximately 5000 students are enrolled in 17 sections of 13 different courses. No faculty members have been released as a result of the introduction of television.—*L. Twyford*

KUMATA, HIDEYA. *Attitude Change and Learning as a Function of Prestige of Instructor and Mode of Presentation.* Communications Research Center, Michigan State University, East Lansing, Michigan. 1958. 139 p.

Purpose: To investigate attitudes related to television instruction, to determine the effect of the perceived expertness of the instructor, and to study the effect of ability levels and prior television exposure of students upon their attitudes. Also to discover how these factors are related to information gain.

Procedure: 764 students saw a well-structured 30-minute televised lecture on a social science topic over closed-circuit television. Three instructors taught six sections of students over a three-day period. Attitudes were measured using the Semantic Differential technique. Learning was measured with a 15-item multiple choice test. The prestige of instructors was established by introducing one as an ordinary classroom instructor, one as a departmental expert, and the third as a national authority. All classes were retested eight weeks later.

An advertising course with 106 students was also analyzed. This course lasted for one quarter and was taught by one instructor in a face-to-face class, an in-studio class, and a television class. The course was heavily visualized. Regular exams were used in addition to two specially constructed quizzes. Attitudes were measured using a Semantic Differential format.

Results: Television students did poorer than nontelevision students. Attitudes toward aspects of course content changed but no more so than for regular students. Prestige effects were not consistently in one direction. No novelty effects were noted. Students that had taken television courses previously were more favorable to them than first-exposure students. Low ability students did not learn better from televised courses.—*L. Twyford*

MERRILL, I. R. *The Impact of an Educational Television Series.* WKAR-TV Research Report 573M. Michigan State University, East Lansing, Michigan. April 1957. 78 p.

Purpose: To determine whether the *County Agent* television film series would have an impact upon a general audience. To check on the practicability of program evaluation of an on-the-air program so as to measure total program impact and strengths and weaknesses of program segments. Also it was desired to find any relationship between the Semantic Differential evaluative scale and the like-dislike scale of the WKAR-TV Program Analyzer.

Procedure: 120 persons were shown two sample programs from the series during a two-hour session which included time for testing and a group interview. Learning was measured using the Cloze Procedure pre- and post-tests. Attitude shift was measured using pre- and post-test versions of the Semantic Differential. Program appeal and evaluation of segments of the program were

measured using the program analyzer to summate ratings made during the program.

Results: The television film series was effective in promoting learning. Attitude shifts in the desired direction were obtained. The over-all method for program evaluation was found to be practical and to justify its expense in terms of important data obtained. No relation was demonstrated between the evaluative scale of the Semantic Differential and the like-dislike program analyzer scale. Attitude shift toward specific concepts was not related to corresponding profile segment levels.—*L. Twyford*

MACOMBER, F. G.; SIEGEL, LAURENCE; HATHAWAY, STEPHEN C; and DOME, JOHN E. *Experimental Study in Instructional Procedures.* Report No. 2. Miami University, Oxford, Ohio. October 1, 1957. 65 p.

Purpose: To study the effectiveness and feasibility of three types of large group instruction: (a) courses taught by television, (b) large lecture classes, and (c) courses taught by graduate student assistants.

Procedure: Twenty-three courses were included in this study which was financed by the Fund for the Advancement of Education. The television equipment used was listed at $34,000. Television programs were telecast from a studio to about 180 students at a time. The groups were given objective examinations and rating scales to measure student and instructor attitudes. Control groups were set up for each experimental group.

Results: Television students acquired about as much knowledge as those assigned to control groups. Acquisition of subject-matter knowledge is not adversely affected by assignment to a large class rather than to a small control section. The effectiveness of instruction by graduate assistants in contrast to that by regular faculty members is still undecided. Ability to solve problems was somewhat inferior in television classes but was comparable in large classes. Attitudes toward a course are determined more by course content and ability of the instructor to handle a large group than by class size alone. Student motivation and interest does not diminish in television and large class sessions over a period of one semester but students generally prefer the conventional class situation. Students appear to become progressively disenchanted with television. Attitudes about television and large class instruction are independent of students' academic ability level. Instructors prefer conventional classes but liked television better than they anticipated. Instructor objections were the lengthy preparation time and physical barrier between student and teacher. College professors were found to make inadequate use of audio-visual aids principally because they are not readily available. Television is seldom economical for small group instruction. The cost per student credit hour normally averaged about $7.50. The cost for televised instruction was $12.90. The cost for large classes averaged $5.15. The cost for graduate assistant courses in small groups approximated $4.20.—*L. Twyford*

LOS ANGELES CITY SCHOOL DISTRICTS. ***An Evaluation of Closed Circuit Television for Teaching Junior College Courses.*** Evaluation and Research Section, Division of Extension and Higher Education, Los Angeles City School Districts, Los Angeles, California. 1957. 119 p.

Purpose: To determine the effect upon the student and instructor of using closed-circuit television in teaching junior college courses and to determine which courses can be taught most satisfactorily. Also, it was desired to estimate costs for expansion of the program and to establish working relations between the staff of the television program and administrators.

Procedure: A studio was set up with four vidicon cameras that could be selected for transmission by the instructor. A lavolier microphone was used to pick up the instructor's voice. Intercommunication was maintained with the receiving room. There was no need for a producer, director, cameraman, or engineer since the instructor selected preset cameras by depressing push-buttons. About 90 students were taught in each of three subjects: physical education, geography, and physics. The same instructor taught a control group under nontelevised conditions. In addition to objective tests, students were administered two questionnaires and were interviewed.

Results: There were practically no significant differences in achievement among equated studio classes, receiving classes, and nontelevised classes as measured by tests. Eighty-four percent of the students believed instruction by television was at least as good as that in the traditional classes. Forty-six percent wished to enroll in another televised course. Instructors felt satisfied that instructional television is practical and, within limits, desirable and useful. Experience on television improved the instruction of that instructor. The value of having a studio class was not clear. Some kinds of instruction are better over television, most are as good, and a few do not presently lend themselves to television. Visual aids were of considerable importance. Full use was not made of the intercommunication facilities. It was recommended that it be assumed that television produces no significant differences in achievement.—*L. Twyford*

SAWYER, JAMES W. and **WOODLIFF, CHARLES M.** ***A Survey of Policies and Procedures for Selection, Administration, Production, and Evaluation of Formal Adult Instruction for College Credit by Television.*** The Radio-Television Department, Syracuse University, Syracuse, N. Y. August 1957. 38 p.

Problem: The purpose was to gather and consolidate information concerning the problems involved in setting up credit courses over educational and commercial television stations.

Procedure: Two questionnaires were developed. One was for persons responsible for formulation of telecourse policy. It was sent to 44 institutions.

A second was sent to 196 professors who teach the courses. Sixty-nine replies were received from 49 institutions reporting that credit courses had been offered by television.

Results: Telecourses are usually in the Radio-Television Department or Extension Division with an emphasis on public service and public relations. Offerings are usually based upon the availability of a strong or popular teacher with a good camera personality. Courses are usually evaluated in comparison with on-campus students. A third of the institutions reported a favorable faculty attitude toward telecourse activity. Television courses have been largely experimental and existing budgets have usually been used. A few institutions have special budgets. Instructors usually have reduced teaching loads. Most of the courses are in the humanities and social studies area. Courses are usually for three credits, are offered once a week for 30 minutes. The median enrollment for credit was 19 students and for noncredit was 20. Grading was usually based on the final exam. Satisfaction with working in a new medium was the greatest reward to most teachers. They missed teacher-pupil contact and found problems in adjusting to the new medium. They noticed increased prestige. Instructors felt they were relatively well compensated but felt they needed more preparation time, could use more visuals, needed students in the studio, and a better knowledge of the medium.—*L. Twyford*

TRAINING AIDS

SILVERMAN, R. E. *The Comparative Effectiveness of Animated and Static Transparencies.** Technical Report NAVTRADEVCEN 78-1. U. S. Naval Training Devices Center, Office of Naval Research, Port Washington, L. I., N. Y. April 11, 1958. 25 p.

Purpose: The purpose of this study was to furnish experimental evidence of the differences in "effectiveness" of two types of transparencies to be used by the U. S. Naval Training Devices Center. The one type was "static"; the other, "animated."

Procedure: One hundred fifty male college students were assigned at random to one of six groups. The groups differed according to subject matter encompassed by the device (.45 cal. pistol, .30 cal. rifle, .30 cal. carbine) and, within subject matter, according to type of device, "static" or "animated." The "animated" devices differed among themselves in the degree of complexity as roughly defined by the number of moving parts in each. Verbal instruction was given by means of tape recorded lecture, supervised by the one instructor for all groups. Three types of tests (multiple choice, fill-in, and performance) differing in their emphasis on verbal factors were used to measure "effectiveness."

* An unrestricted royalty free license has been granted the United States Government.

Results: (a) No differences between animated and static transparencies were observed with the paper and pencil tests. (b) Significant differences appeared between the animated and static transparencies with the performance tests. (c) The number of moving parts in the devices did not affect the relationship between the animated and static transparencies. However, for one of the devices, the M1 rifle, the results suggested that differences between static and animated transparencies could be related to the factor of number of *simultaneously moving* parts.—*H. A. Bern*

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